*************

RESPOND OR RETURN TO: Service Operations, Communications
Cupertino - M/S: 27 IH
Telephone: (408) 973-3256 (Susan)
Or: (408) 973-3828 (Don)
EMAIL: SEROPS

*************

CLARIFICATION TO THIS NOTICE
OF 4/15/84
SEE NOTE BELOW

Title: APPLE /// PROFILE INTERFACE CARDS

PROBLEM

Potential problems in random data handling/command errors may arise with Apple /// and Profiles when the new RFI shielded cables are used with earlier versions of the Apple /// interface card. End Users may get a large number of "Bad Block" indications and in some instances, the Profile is unable to read files saved and sector damage is indicated.

CAUSE

Resistor Array values on the Apple /// Interface Card (at location DM 1 and DM 2) were changed from 330 Ohms to 100 Ohms. Interface Cards with the 330 Ohms resistor arrays (manufactured prior to October 1983) are not compatible with the new Profile Shielded Cable, P/N 590-0202. When the older interface cards are connected to the shielded cables, an impedance mismatch occurs that results in error messages.

ACTION

-- The flat ribbon cables (P/N 590-0046) will operate on either the 330 Ohm or the 100 Ohm revisions Interface Card.

-- If the RFI Shielded Cable (P/N 590-0202) is to be used, the Apple /// Interface Card for the Profile must have 100 Ohm resistor Arrays at location DM 1 and DM 2. The 100 Ohm resistor Arrays (P/N [illegible]) replace the old 330 Ohm resistor arrays.

-- It is recommended that the Apple /// Interface Cards in the [illegible] Accessory Kits be checked for the 100 Ohm resistor arrays before sale to an end user.

NOTE: 10/15/84 Clarification

WHERE 100 OHM IS MENTIONED ABOVE, THE ACTUAL TERM SHOULD READ:

8 X 100 OHM DIP

0021-6

# APPLE COMPUTER, INC
# INTERNATIONAL SERVICE
# LEVEL II SERVICE MANUAL UPDATE
# PRODUCT: ProFile, 072-0116

## UPDATE #1
## 10/12/84

| REMOVE PAGES | DATE | INSERT PAGES | DATE |
|---|---|---|---|
| Table of Contents | 11/28/83 | i and ii | 10/12/84 |
| 3.1 and 3.2 | 11/28/83 | 3.1 | 10/12/84 |
| | | 3.2 | 11/28/83 |

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| ADD PAGES | DATE |
|---|---|
| Material Requirements<br>(Place in front of Table of Contents) | |
| Appendix E<br>Schematic, 050-5006-E<br>Schematic, 050-4034-A<br>Schematic, 050-5005-J<br>Schematic, 050-5025-A<br>Schematic, 050-5007-A<br>Schematic, 050-5009-A | 10/12/84 |
| Appendix F<br>Bills of Materials 661-92049<br>Bills of Materials 661-92048<br>Bills of Materials 661-92050<br>Bills of Materials A9M0005<br>Bills of Materials A9M1005<br>Bills of Materials A3M0305 | |

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**PEN & INK CHANGES**

| PAGE NUMBERS | CHANGE ACTIONS |
|---|---|
| i (How to Use This Manual) | Delete "Page i" at bottom center of page. |
| Pages 3.3 thru 3.9 | Change "Appendices" at bottom left of pages to read "Appendix A". |
| Pages 3.10 thru 3.19 | Change "Appendices" at bottom left of pages to read "Appendix B". |
| Pages 3.20 thru 3.26 | Change "Appendices" at bottom left of pages to read "Appendix C". |
| Pages 3.27 thru 3.123 | Change "Appendices" at bottom left of pages to read "Appendix D". |
| Schematics | Write "Appendix E" at bottom left of all schematics pages. |

# PROFILE

# LEVEL II SERVICE MANUAL

072-0116

# NOTICE OF PROPRIETARY PROPERTY

# Service Manual Review Form

Please list any technical errors found in this manual on a sheet of paper and attach it to a copy of this form. Be sure to include the page and paragraph of the error, and to provide a correction.

If you feel that any information needs to be clarified, added, or explained in greater detail, or if you think that the manual could be laid out in a better order or format, please note that on a sheet of paper and return it also. Include the page and paragraph to be expanded, or a description of the missing information, or a description of the job you are performing for which more detail is required, or your suggested format/layout.

Though we would like to get these forms back with written feedback, E-mail or Telex responses will be gratefully accepted.

Remember, your feedback will help to ensure that this manual gets corrected and improved, and that future revisions and manuals may more fully meet your needs.

Manual: PROFILE, 072-0116

Reviewer's Name: ______________________ Date: ________

Reviewers Location: ________________________________

Hours reviewing manual: ( ) Under 4 ( ) 4-8 ( ) Over 8

Please send your feedback to:

Apple Computer, Inc.
AFEA Service, Technical Support
232 Java Drive
Sunnyvale, CA 94086
E/Mail: Apple INTSER

## HOW TO USE THIS MANUAL

The Pro-File Phase 1 Service Manual is divided into 3 sections:

### SECTION 1  TROUBLESHOOTING:

This section contains a flowchart procedure and corresponding explanation for troubleshooting a problem Pro-File to the faulty module.

### SECTION 2  SERVICE PROCEDURES:

This section contains the various procedures needed to test, adjust, and remove or replace the modules on the Pro-File.

### SECTION 3 APPENDICES:

This section contains various descriptions referred to by the other sections for the purpose of providing general and specific information on Pro-File operation.

# PROFILE EQUIPMENT LIST

1) DEBUGGER:
   - FIRMWARE..........................889-9007
   - Z8................................338-8603

2) SOFTWARE DUPLICATION:
   - FST...............................889-0029
   - QUICK DEBUG (Ver. 7)..............889-0004
   - FORMAT CERTIFY....................889-0013
   - BIG DEBUG (Ver. 17)...............(INCLUDED)

3) UPGRADE KIT:
   - MASKED Z8 MICROPROSSOR.............341-0171
   - 6.36 x 5/16 STANDOFF...............860-0213
   - 5.1K OHM RESISTER..................101-4512
   - 0.1 MICROFARAD CAPACITOR...........130-0007
   - 1K OHM RESISTER....................101-4102
   - 330 OHM DIP PACKS..................112-0105
   - 3.9K OHM RESISTER..................101-4392
   - 26 TO 30 GAUGE INSULATED WIRE.........N/A

4) MISCELLANEOUS TOOLS:
   - TEST LED...........................590-0047
     (CUT DOWN)
   - JUMPER
     (USED DURING FORMAT)
   - ALLEN (hex) DRIVERS
     (BRAKE ADJUSTMENT 5/64)
     (TRACK ADJUSTMENT .050)

**Material Requirements**
**For Repair of**
**5MB ProFile**

Known Good Test Unit:
A9M0005/A9M1005 ProFile System, 115V/230V

Documentation :

| | |
|---|---|
| 072-0116 | ProFile Level II Service Manual |
| 204-1011 | Level II Technical Reference (Schematics) Volumes I, II & III |

Diskettes :

| | |
|---|---|
| 077-0010 | A3/ProFile Diagnostic Diskette |
| 077-0039 | Limited Data Recovery |
| 889-0004 | Quick Debug Diskette |
| 889-0013 | Format/Certify Diskette |
| 889-0029 | Final System Test Diskette |
| XXX-XXXX | D-Bug Diskette |

Tools/Tooling/Supplies :
Apple /// System
A3M0001 Silentype Printer
5/64" Allen (Hex) Driver
.050" Allen (Hex) Driver
.010" Wire Gauge
.070" Wire Gauge
.010" Flat Gauge
.030" Flat Gauge

Hardware:

| | |
|---|---|
| 101-4102 | Resistor, 1K ohms 5% |
| 101-4512 | Resistor, 5.1K ohms |
| 112-0105 | Resistor Array, 330 ohms DIP |
| 112-0107 | Resistor Array, 100 ohms DIP |
| 130-0007 | Capacitor, 0.1uf |
| 338-8603 | Z8 Firmware |
| 341-0171 | IC, Masked Z8 Microprocessor |
| 590-0047 | Test LED |
| 860-0213 | 6.36 x 5/16 Standoff |
| 889-9007 | IC, EPROM Debugger Firmware |

# Level II Repair Center Common Material Requirements

1. TEST EQUIPMENT:
   Dual Trace Oscilloscope
   High Voltage Probe
   HTR1005B-S Huntron Tracker
   HSR410 40-Pin Huntron Switcher
   Digital Multimeter
   Frequency Counter
   Continuity Tester
   890-8011 115V Z5212 Power Supply Tester
   890-7030 Z5212 A2 Load Module
   890-7031 Z5212 A3 Load Module
   890-7032 Z5212 ProFile Load Module
2. DOCUMENTATION:
   204-1011 Level II Technical References (Vol's I, II & III)
3. TOOLS/TOOLING/SUPPLIES:
   916-0001 Circuit Cooler
   918-0003 Solder SN60/20S.W.G.
   918-0017 IC Puller
   Solder Station
   Solder Remover
   Flux Solvent and Acid Brush
   Heat Gun
   Set of Slotted Screwdrivers
   Set of Phillips Screwdrivers
   Set of Jeweler's Screwdrivers
   Magnetic Screw Retriever
   Set of Hex (Allen) Wrenches
   Needle Nose Pliers
   Duck Bill Pliers
   Wire Cutters
   Diagonal Cutters
   Wire Strippers
   X-acto Knife
   Scribe
   Magnifying Glass with Light
   Industrial Grade Alcohol (90% or better)
   IC Clips, 16, 20, 24, and 40 Pins
   26 gauge green wire
   12-inch Jumper Wire with Insulated Clips
   Jumper Leads
   Heat Sink Hemostats
   Safety goggles
   Heavy Duty Vise (for power supplies)
   PCB Vise (for desoldering/soldering PCB's)
   Desk Top Storage Container for Hardware
   Anti-static Foam Pads 12x18 inches
   Reversible Drill and Bits
   Small Sonic Cleaning Tank
   Mirror for Monitor Repairs
   Hammer
   Punch for knocking pop rivets out of power supplies
   Large Roll-around Racks
   Small Roll-around Racks
   Shelving for Material Awaiting Repair
4. HARDWARE:
   590-0003 115V AC Power Cord

**ProFile**
**Phase 1 Service Manual**

## TABLE OF CONTENTS

### Section 1 -- Troubleshooting



### Section 2 -- Service Procedures

## TABLE OF CONTENTS

# SECTION 1

# TROUBLESHOOTING

## SECTION 1 TABLE OF CONTENTS

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## IMPORTANT READ THIS

### HOW TO USE THIS SECTION

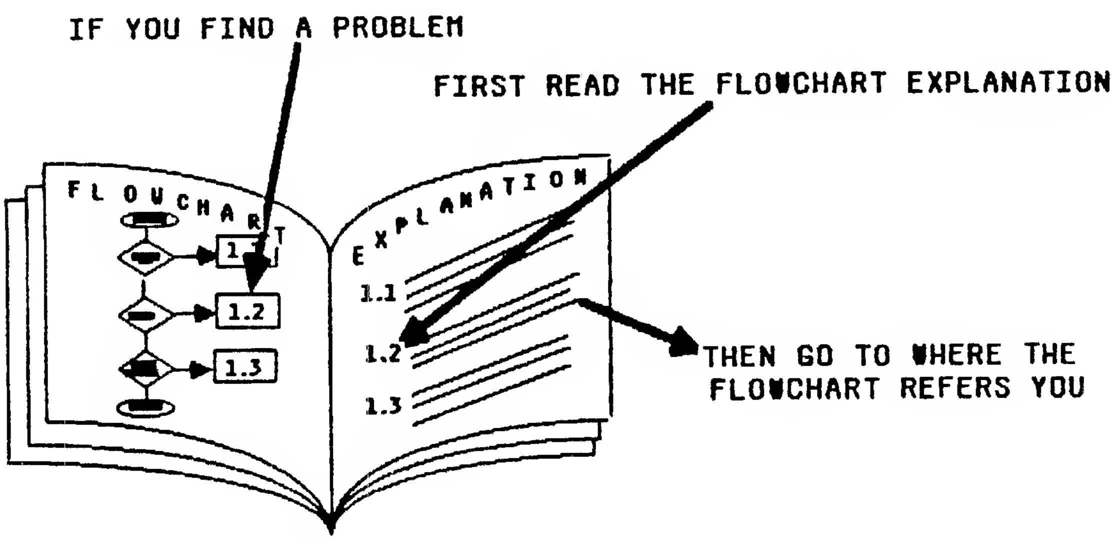
The procedure in this Troubleshooting Section is concerned with isolating a problem in the Pro-File to a malfunctioning module (i.e. Controller PCB, Analog PCB, Hard Disk Assembly (HDA), or Power Supply).

CAUTION: The Hard Disk Assembly (HDA) is a very expensive and fragile device, handle it gently to avoid damage.

To troubleshoot the Pro-File use the flowcharts in this section beginning with the main flowchart on the next page.

**If you find a problem, go to the opposite page and read the explanation for the check that failed.** This explanation will provide you with valuable information on the reasoning behind the flowchart, and will also provide you with references to sections 2 and 3 for needed procedures and additional information. After reading the flowchart explanation, you may if you wish take the action indicated at the NO branch of that check.

* If you are not familiar with Pro-File operation you may wish to read the Pro-File HDA description and/or the Pro-File Overview in the Appendices Section.



START HERE

# SHEET 1

10/19/83

REMOVE THE COVER FROM THE PROFILE
INSERT TEST LED AT P4 ON THE CONTROLER PCB
(SERVICE PROCEDURES IF INSTRUCTIONS ARE NEEDED)

DOES CONTROLLER PCB HAVE SYSTEM Z8 WITH MASKED ROM ?

READ 1.1

NO → INSTALL A SYSTEM Z8 WITH MASKED ROM ONTO THE CONTROLLER PCB

YES

OBSERVE THE SCAN SEQUENCE (BELOW) AS YOU TURN ON THE PROFILE:

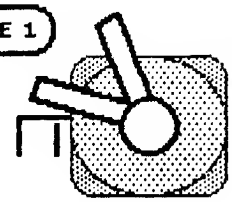
NOTE: SCAN SHOULD TAKE NO LONGER THAN 90 SEC

1. THE READY LAMP SHOULD COME ON FOR LONGER THAN 0.5 SECOND THEN GO OFF
2. AFTER ABOUT 20 SECONDS, THE INTERRUPTER ARM ON THE HDA SHOULD MOVE TO THE "TRACK 0" POSITION (SHOWN IN FIGURE 2)
3. THE READY LAMP SHOULD BLINK AS THE INTERRUPTOR ARM STEPS THROUGH EACH TRACK FROM TRACK 0 TO PARK POSITION

NOTE:
a. THE INTERRUPTER ARM MAY MOMENTARILY GO TO THE SPARES TABLE AT THE CENTER OF ITS TRAVEL FOR SPARED SECTORS. THIS IS NORMAL (FOR MORE INFORMATION ON THE SPARES TABLE REFER TO THE FORMAT EXPLANATION IN APPENDICES SECTION)
b. IF AN ERROR IS DETECTED WHILE READING A SECTOR, THE INTERRUPTER ARM MAY HESITATE AT A SINGLE TRACK FOR SEVERAL SECONDS TO VERIFY THE MEDIA THIS IS NORMAL

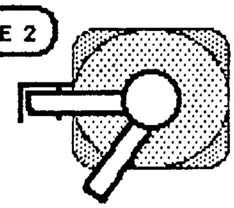
4. AT THE END OF SCAN THE INTERRUPTOR ARM SHOULD RETURN TO PARK POSITION (FIGURE 1) AND STAY THERE THEN THE READY LAMP SHOULD COME ON STEADILY

FIGURE 1



INTERRUPTOR ARM IN PARK POSITION

FIGURE 2



INTERRUPTOR ARM IN TRACK 0 POSITION

SCAN OK ?

READ 1.2

NO → GO TO NO SCAN FLOWCHART ON PAGE 1.14

YES

BOOT AND RUN THE QUICK DEBUGGER ON THE PROFILE. SAVE THE HARD COPY PRINTOUT. (IF INSTRUCTIONS ARE NEEDED REFER TO SERVICE PROCEDURES)

GO TO SHEET 2

1.1 When the Pro-File first came out the firmware program used for the Z8 microprocessor on the Controller PCB was contained on a ROM chip located piggyback on the Z8. After this version had been out in the field awhile, it was found that due to the heat expansion that occurred when the machine was turned on, the leads from the ROM's piggyback socket were intermittently separating from the Z8.

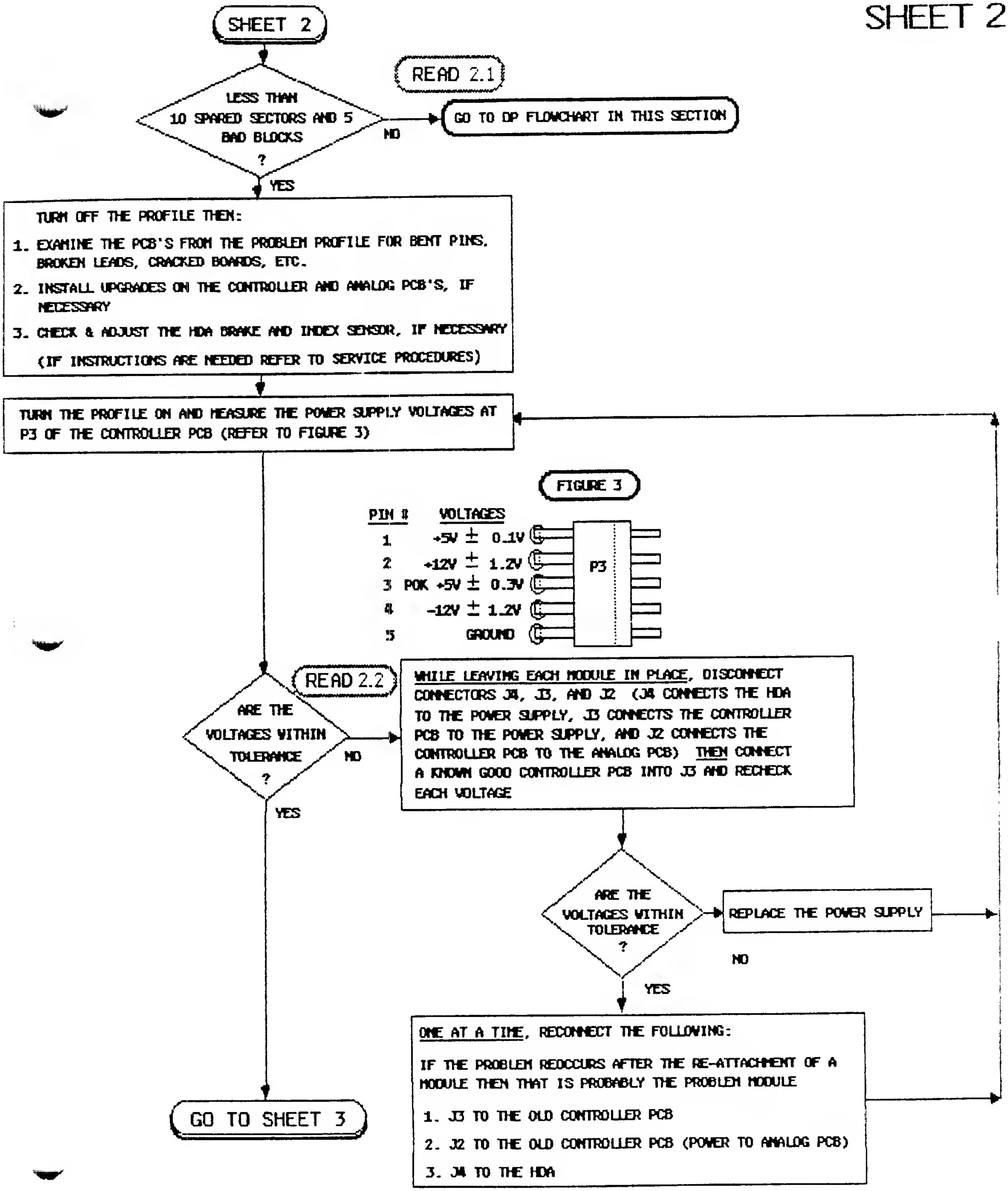
Since the Z8 would be looking for program instructions when this happened, the temporarily open input would be interpreted as a bit in an instruction code and cause the Z8 to do strange things including putting the Pro-File into Write mode as the heads were doing a seek to a target track. This of course destroyed any sector header and/or data block fields that happened to be passing under the heads as they were on their way to the target track.

Later when a read of the damaged sectors was tried, either as a result of the next power up Scan operation, or a read command from the host computer system, the Z8 would detect the problem and ultimately spare the sector which of course made the malfunction look like a media problem.

The logical solution for the imagined media problem (the Z8 problem was not known at the time) was to replace the now badly formatted (though undamaged) HDA with a new HDA. This action would cause the Pro-File to work fine until the piggyback ROM again separated from the Z8. The HDA would be replaced again, ... etc.

Needless to say this process was not very effective. The **masked ROM Z8** has been developed to be an effective solution to this problem. All **piggyback Z8s** are to be replaced with this version. It is projected that most of the current Pro-File problems will be remedied by this upgrade. **(Now return to the point in the flowchart which referred you to this discussion.)**

1.2 All functions performed by the Controller and Analog PCBs and the HDA are ultimately controlled by the firmware program in the Z8 microprocessor on the Controller PCB. During power up on the Pro-File the Z8 will have the Pro-File go through a Scan operation in which certain specific things are checked for. A detailed explanation of the Scan operation may be found in Section 3 of this manual. **(Now proceed to the NoScan flowchart.)**


SHEET 2
READ 2.1
LESS THAN 10 SPARED SECTORS AND 5 BAD BLOCKS ?
NO
GO TO DP FLOWCHART IN THIS SECTION
YES
TURN OFF THE PROFILE THEN:
1. EXAMINE THE PCB'S FROM THE PROBLEM PROFILE FOR BENT PINS, BROKEN LEADS, CRACKED BOARDS, ETC.
2. INSTALL UPGRADES ON THE CONTROLLER AND ANALOG PCB'S, IF NECESSARY
3. CHECK & ADJUST THE HDA BRAKE AND INDEX SENSOR, IF NECESSARY
(IF INSTRUCTIONS ARE NEEDED REFER TO SERVICE PROCEDURES)
TURN THE PROFILE ON AND MEASURE THE POWER SUPPLY VOLTAGES AT P3 OF THE CONTROLLER PCB (REFER TO FIGURE 3)
FIGURE 3
PIN #
VOLTAGES
1 +5V ± 0.1V
2 +12V ± 1.2V
3 POK +5V ± 0.3V
4 -12V ± 1.2V
5 GROUND
P3
READ 2.2
ARE THE VOLTAGES WITHIN TOLERANCE ?
NO
YES
WHILE LEAVING EACH MODULE IN PLACE, DISCONNECT CONNECTORS J4, J3, AND J2 (J4 CONNECTS THE HDA TO THE POWER SUPPLY, J3 CONNECTS THE CONTROLLER PCB TO THE POWER SUPPLY, AND J2 CONNECTS THE CONTROLLER PCB TO THE ANALOG PCB) THEN CONNECT A KNOWN GOOD CONTROLLER PCB INTO J3 AND RECHECK EACH VOLTAGE
ARE THE VOLTAGES WITHIN TOLERANCE ?
REPLACE THE POWER SUPPLY
NO
YES
ONE AT A TIME, RECONNECT THE FOLLOWING:
IF THE PROBLEM REOCCURS AFTER THE RE-ATTACHMENT OF A MODULE THEN THAT IS PROBABLY THE PROBLEM MODULE
1. J3 TO THE OLD CONTROLLER PCB
2. J2 TO THE OLD CONTROLLER PCB (POWER TO ANALOG PCB)
3. J4 TO THE HDA
GO TO SHEET 3

2.1 The Quick Debugger program reads the Spares table on the Profile and prints the original sector location of every spared sector listed in that table. Additional information on sparing sectors may be found in the Special Function Tracks explanation in the HDA format description in the Appendices Section of this manual. At this point in the flowchart you know that Scan worked OK, but that the HDA has spared too many sectors. Spared sectors can be caused by either:

1. **Electronic problems** causing a sector to be unreadable or somehow alter its data bit pattern at the original sector location on the disk. For example the Z8 may have malfunctioned as it was performing a Seek, and instructed the electronics to write as the heads were moving across the media to a target track. This of course would destroy the parts of all the sectors that the head passed over on its way to the target track.
2. **Media problems** making it impossible to record magnetic information on a sector where it occurs. This could be a manufacturing defect in the media (the magnetic coating on the disk), or a ding in the media caused by head contact.

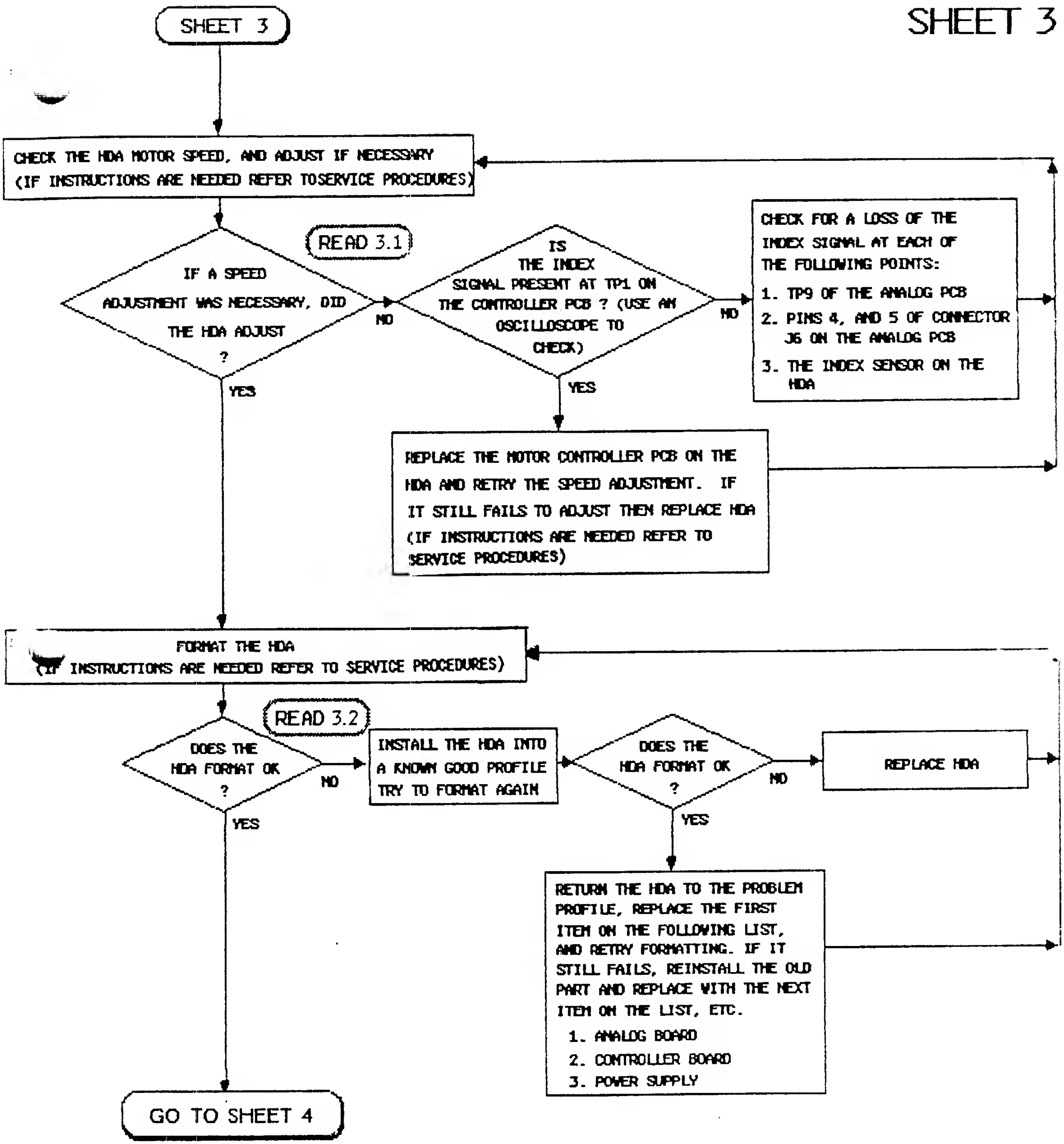
One way to determine whether a spared sector was caused by a media problem or an electronic problem is to continuously read the questionable sector and examine its analog signal with an oscilloscope. The Quick Debugger printout gives you a list of spared sectors that you might want to look at. The DP (Diagnostic Procedure) flowchart that you are being referred to, will explain how you can continuously read a spared sector and interpret its analog signal. **(Now proceed to the DP Flowchart.)**

2.2 A missing or out of tolerance voltage can be caused by any of the modules in the Pro-File. The method used in this flowchart to isolate the problem module is to disconnect the power supply from all the modules, plug in a known good Controller PCB and monitor the voltages at P3 (the power supply connection to the Controller PCB). If the power supply is at fault then the voltage/s will still be missing or out of tolerance.

**WARNING:** At least one module must be connected to the Power Supply at all times to provide it with a load.

If the voltages are OK with the known good Controller PCB installed, then the problem must be with a module other than the power supply. To determine which of these modules is causing the power problem, each module is reconnected one at a time and P3 is checked after each reconnection. **(Now return to the flowchart.)**

# SHEET 3

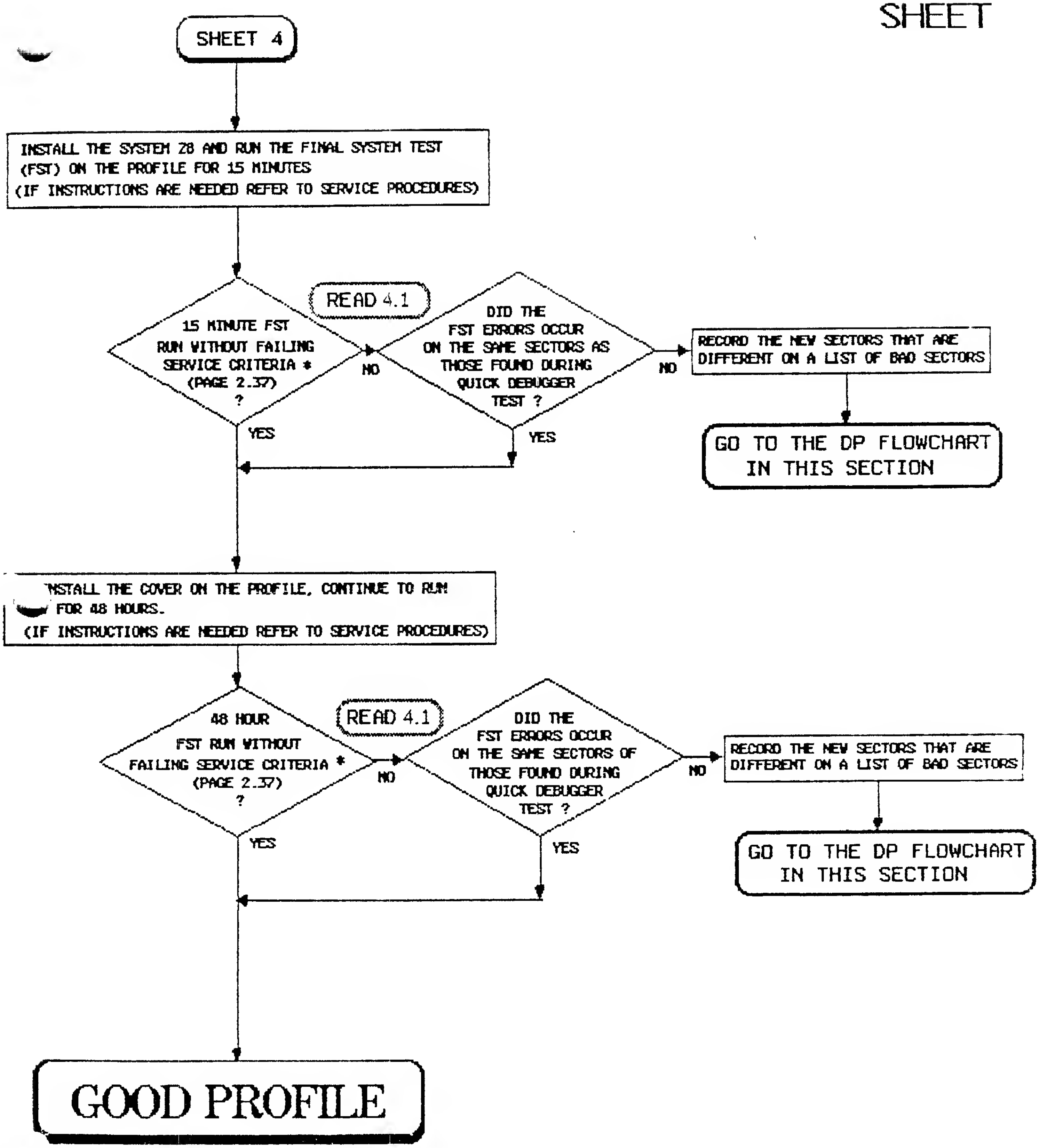

SHEET 3
CHECK THE HDA MOTOR SPEED, AND ADJUST IF NECESSARY (IF INSTRUCTIONS ARE NEEDED REFER TO SERVICE PROCEDURES)
READ 3.1
IF A SPEED ADJUSTMENT WAS NECESSARY, DID THE HDA ADJUST ?
YES
NO
IS THE INDEX SIGNAL PRESENT AT TP1 ON THE CONTROLLER PCB ? (USE AN OSCILLOSCOPE TO CHECK)
YES
NO
CHECK FOR A LOSS OF THE INDEX SIGNAL AT EACH OF THE FOLLOWING POINTS:
1. TP9 OF THE ANALOG PCB
2. PINS 4, AND 5 OF CONNECTOR J6 ON THE ANALOG PCB
3. THE INDEX SENSOR ON THE HDA
REPLACE THE MOTOR CONTROLLER PCB ON THE HDA AND RETRY THE SPEED ADJUSTMENT. IF IT STILL FAILS TO ADJUST THEN REPLACE HDA (IF INSTRUCTIONS ARE NEEDED REFER TO SERVICE PROCEDURES)
FORMAT THE HDA (IF INSTRUCTIONS ARE NEEDED REFER TO SERVICE PROCEDURES)
READ 3.2
DOES THE HDA FORMAT OK ?
YES
NO
INSTALL THE HDA INTO A KNOWN GOOD PROFILE TRY TO FORMAT AGAIN
DOES THE HDA FORMAT OK ?
YES
NO
REPLACE HDA
RETURN THE HDA TO THE PROBLEM PROFILE, REPLACE THE FIRST ITEM ON THE FOLLOWING LIST, AND RETRY FORMATTING. IF IT STILL FAILS, REINSTALL THE OLD PART AND REPLACE WITH THE NEXT ITEM ON THE LIST, ETC.
1. ANALOG BOARD
2. CONTROLLER BOARD
3. POWER SUPPLY
GO TO SHEET 4

3.1 The Index signal is never actually used by the Pro-File electronics after the HDA has been formatted. During the format process, Index is used to provide a reference for the sectoring scheme to be put on the disk. (For an explanation of the Format used on the Pro-File refer to the Pro-File HDA Description in the Appendices section of this manual.)

But the Index does provide the technician with an indication of actual disk speed. It should occur once per revolution just before sector 0 on disk surface 0. Since the disk speed is supposed to be 3600 RPM this means that the frequency counter should measure a 16.666 ms period between each Index pulse.

If the Index signal is present at TP1 of the Controller PCB, but will not adjust as per directions in the Index Check and Adjustment procedure in the Service Procedures Section of this manual, then the problem could be with the electronics on the Motor Controller PCB on the HDA, or with the disk motor on the HDA. If the signal is absent at TP1 on the Controller PCB, then flow should be traced back to the Index sensor on the bottom of the HDA. **(Now return to the point in the flowchart which referred you to this discussion.)**

3.2 During the Format process all sector headers and marks are erased and the spares tracks (track 77 on all disk surfaces) are erased. An inability to format could be caused by an electronic problem in the Pro-File, or by the HDA. If the HDA formats OK after putting it into a known good Pro-File, then the problem is probably with one of the electronics modules in the Pro-File. **(Now return to the point in the flowchart which referred you to this discussion.)**


SHEET 4
INSTALL THE SYSTEM Z8 AND RUN THE FINAL SYSTEM TEST (FST) ON THE PROFILE FOR 15 MINUTES (IF INSTRUCTIONS ARE NEEDED REFER TO SERVICE PROCEDURES)
15 MINUTE FST RUN WITHOUT FAILING SERVICE CRITERIA * (PAGE 2.37) ?
READ 4.1
NO
DID THE FST ERRORS OCCUR ON THE SAME SECTORS AS THOSE FOUND DURING QUICK DEBUGGER TEST ?
NO
RECORD THE NEW SECTORS THAT ARE DIFFERENT ON A LIST OF BAD SECTORS
GO TO THE DP FLOWCHART IN THIS SECTION
YES
YES
INSTALL THE COVER ON THE PROFILE, CONTINUE TO RUN FOR 48 HOURS. (IF INSTRUCTIONS ARE NEEDED REFER TO SERVICE PROCEDURES)
48 HOUR FST RUN WITHOUT FAILING SERVICE CRITERIA * (PAGE 2.37) ?
READ 4.1
NO
DID THE FST ERRORS OCCUR ON THE SAME SECTORS OF THOSE FOUND DURING QUICK DEBUGGER TEST ?
NO
RECORD THE NEW SECTORS THAT ARE DIFFERENT ON A LIST OF BAD SECTORS
GO TO THE DP FLOWCHART IN THIS SECTION
YES
YES
GOOD PROFILE

4.1 The FST (Final System Test) is an exersizer/tester program used to determine whether or not the Pro-File is operating within acceptable limits.

For approximately the first 10 minutes of the FST, the data block field of every sector is written to and read to detect any CRC read errors.

The system Z8 is used during this test, so the same firmware routines (i.e. Scan, Seek, Read, Retry, Diagnostic, etc.) will be used. After the initial 10 minute write/verify has been performed, the FST exercises the Profile by doing random Seeks, Reads, etc. until its operation is terminated when the operator presses the <ESCAPE> key.

The reason the flowchart has you check for problems after the first 15 minutes of FST is because most hard failures will probably produce errors within 5 minutes after the FST begins to exercise the Pro-File. At this point in the flowchart errors can be caused by 2 types of problems:

1. An **Electronic problem** which has caused a sector to be unreadable by altering the data bit pattern at its original sector location on the disk. For example the Z8 may malfunction as it performs a Seek, and instruct the electronics to write as the heads move across the media to a target track.

   This of course would destroy the parts of all the sectors that the head passes over on its way to the target track (the head should never write during a seek).

2. A **Media problem** which has made it impossible to record magnetic information on the sector where it occurs. This could be a manufacturing defect in the media (the magnetic coating on the disk), or a ding in the media caused by head contact during rough handling.

The big question at this point is which of the 2 types of problems described above is the real culprit. If the error was caused by an itermittent electronic problem producing a bad format on the HDA, then this looks like an HDA (media) problem. However, if the HDA is replaced the problem will probably reoccur in time. (This discussion is continued on the next page.)

4.1 (continued) The method this flowchart uses to determine which type of problem caused the error is to compare the sector locations of sectors that had errors before formatting (a list of these sectors was printed out when you ran the Quick Debugger program on the problem Pro-File), with those produced after formatting (these will be shown by the FST).

If they are the same, then the problem which caused the errors, is probably bad media because bad media locations don't change, so the HDA should be replaced.

If they are different, then the problem is probably electronic. This is because it is highly unlikely that an intermittent electronics problem would occur on the same sector twice.

(If you would like further information on spared sectors, firmware routines, the Pro-File's HDA format, etc., you may refer to the descriptions in the Appendices Section of this manual.)

**If the faulty sectors were the same**, and the number of errors exceeds those specified by the FST service criteria sheet (found in the Service Procedures Section), then replace the HDA and return to the point in the flowchart which referred you to this discussion.

**If they are different**, then the problem is probably electronic and you need to look at some of the different faulty sectors to determine what is bad about them and so determine which module is faulty. The DP (Diagnostic Procedure) flowchart that you are being referred to, will explain how you can continuously read a spared sector and interpret its analog signal. **(If there were different sectors, then proceed to the DP Flowchart.)**

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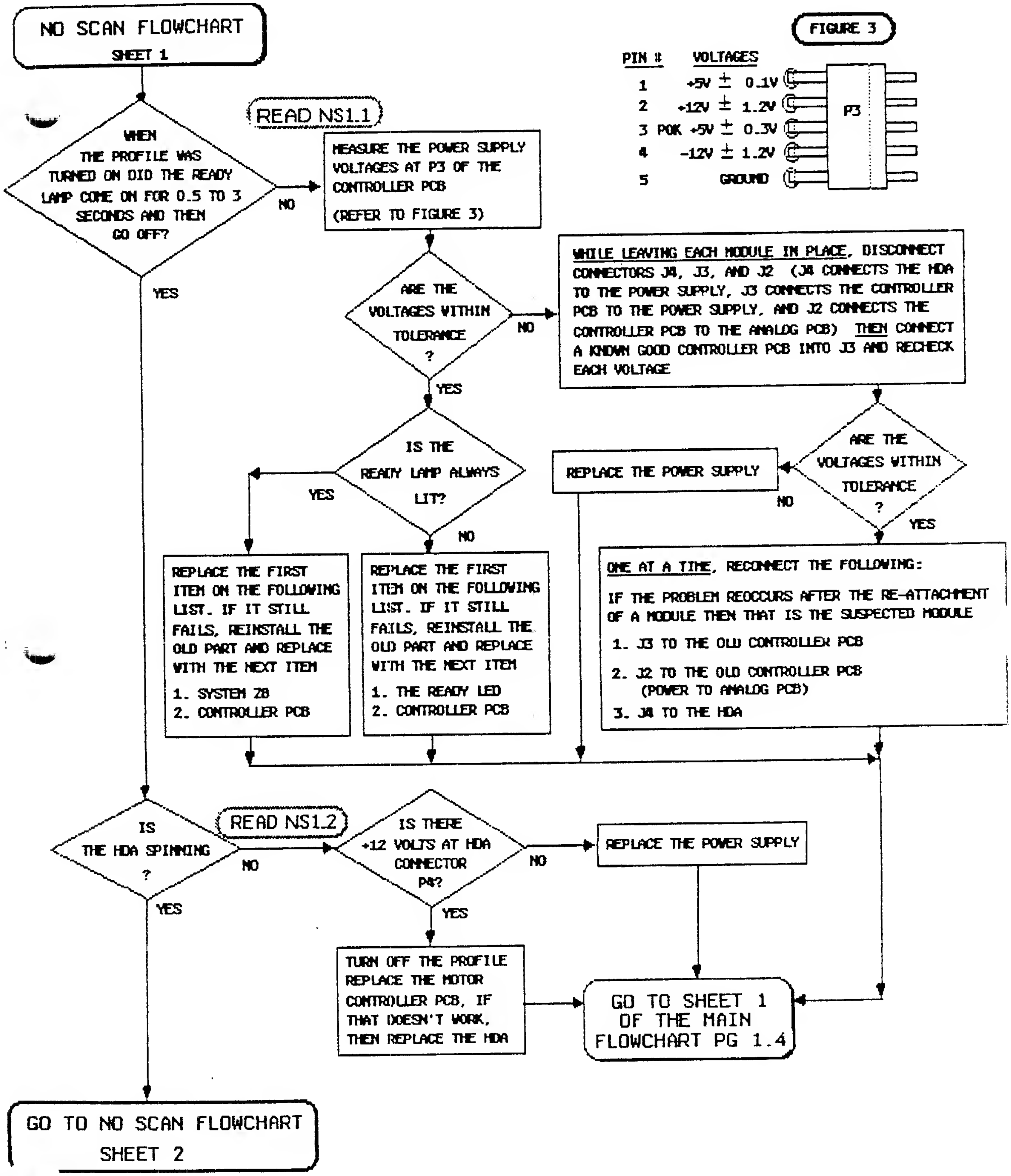
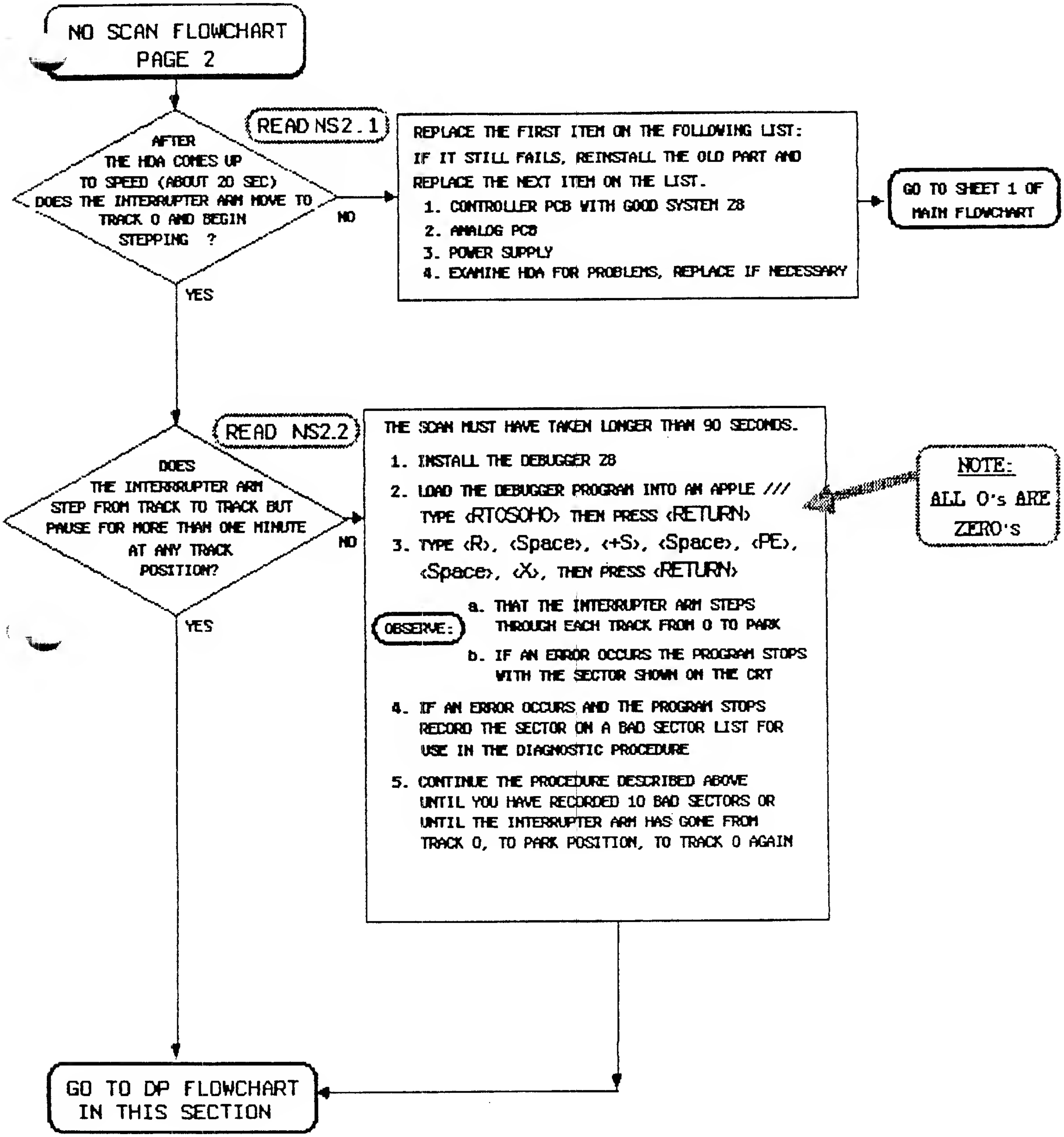

NO SCAN FLOWCHART
SHEET 1
FIGURE 3
PIN # VOLTAGES
1 +5V ± 0.1V
2 +12V ± 1.2V
3 POK +5V ± 0.3V
4 -12V ± 1.2V
5 GROUND
P3
READ NS1.1
WHEN THE PROFILE WAS TURNED ON DID THE READY LAMP COME ON FOR 0.5 TO 3 SECONDS AND THEN GO OFF?
NO
YES
MEASURE THE POWER SUPPLY VOLTAGES AT P3 OF THE CONTROLLER PCB
(REFER TO FIGURE 3)
ARE THE VOLTAGES WITHIN TOLERANCE ?
NO
YES
WHILE LEAVING EACH MODULE IN PLACE, DISCONNECT CONNECTORS J4, J3, AND J2 (J4 CONNECTS THE HDA TO THE POWER SUPPLY, J3 CONNECTS THE CONTROLLER PCB TO THE POWER SUPPLY, AND J2 CONNECTS THE CONTROLLER PCB TO THE ANALOG PCB) THEN CONNECT A KNOWN GOOD CONTROLLER PCB INTO J3 AND RECHECK EACH VOLTAGE
IS THE READY LAMP ALWAYS LIT?
YES
NO
REPLACE THE POWER SUPPLY
ARE THE VOLTAGES WITHIN TOLERANCE ?
NO
YES
REPLACE THE FIRST ITEM ON THE FOLLOWING LIST. IF IT STILL FAILS, REINSTALL THE OLD PART AND REPLACE WITH THE NEXT ITEM
1. SYSTEM Z8
2. CONTROLLER PCB
REPLACE THE FIRST ITEM ON THE FOLLOWING LIST. IF IT STILL FAILS, REINSTALL THE OLD PART AND REPLACE WITH THE NEXT ITEM
1. THE READY LED
2. CONTROLLER PCB
ONE AT A TIME, RECONNECT THE FOLLOWING:
IF THE PROBLEM REOCCURS AFTER THE RE-ATTACHMENT OF A MODULE THEN THAT IS THE SUSPECTED MODULE
1. J3 TO THE OLD CONTROLLER PCB
2. J2 TO THE OLD CONTROLLER PCB (POWER TO ANALOG PCB)
3. J4 TO THE HDA
READ NS1.2
IS THE HDA SPINNING ?
NO
YES
IS THERE +12 VOLTS AT HDA CONNECTOR P4?
NO
YES
REPLACE THE POWER SUPPLY
TURN OFF THE PROFILE REPLACE THE MOTOR CONTROLLER PCB, IF THAT DOESN'T WORK, THEN REPLACE THE HDA
GO TO SHEET 1 OF THE MAIN FLOWCHART PG 1.4
GO TO NO SCAN FLOWCHART SHEET 2

NS1.1 Upon power up on the Pro-File the Z8 will wait for the POK (Power OK) signal to occur. This signal is generated by the power supply when it determines that the proper voltage levels for each voltage have been reached and stabilized. When it happens the Z8 will cause the Ready lamp to extinguish. This should happen within 1/2 to 3 seconds of power up.

A missing or out of tolerance voltage can be caused by any of the modules in the Pro-File. The method used in this flowchart to isolate the problem module is to disconnect the power supply from all the modules, plug in a known good Controller PCB and monitor the voltages at P3 (the power supply connection to the Controller PCB). If the power supply is at fault then the voltage/s will still be missing or out of tolerance.

If the voltages are OK with the known good Controller PCB installed, then the problem must be with a module other than the power supply. To determine which of these modules is causing the power problem each module is reconnected one at a time and P3 is checked after each reconnection. **(Now return to the point in the flowchart which referred you to this discussion.)**

NS1.2 Approximately 20 seconds after the Ready lamp goes out indicating that the power has stabilized, the disk motor should be rotating at 3600 RPM (its operating speed). If the HDA isn't spinning the Pro-File can't read data and that's probably why the Scan operation was unsuccessful. **(Now return to the point in the flowchart which referred you to this discussion.)**


NO SCAN FLOWCHART
PAGE 2
AFTER THE HDA COMES UP TO SPEED (ABOUT 20 SEC) DOES THE INTERRUPTER ARM MOVE TO TRACK 0 AND BEGIN STEPPING ?
READ NS2.1
NO
REPLACE THE FIRST ITEM ON THE FOLLOWING LIST:
IF IT STILL FAILS, REINSTALL THE OLD PART AND
REPLACE THE NEXT ITEM ON THE LIST.
1. CONTROLLER PCB WITH GOOD SYSTEM Z8
2. ANALOG PCB
3. POWER SUPPLY
4. EXAMINE HDA FOR PROBLEMS, REPLACE IF NECESSARY
GO TO SHEET 1 OF MAIN FLOWCHART
YES
DOES THE INTERRRUPTER ARM STEP FROM TRACK TO TRACK BUT PAUSE FOR MORE THAN ONE MINUTE AT ANY TRACK POSITION?
READ NS2.2
NO
THE SCAN MUST HAVE TAKEN LONGER THAN 90 SECONDS.
1. INSTALL THE DEBUGGER Z8
2. LOAD THE DEBUGGER PROGRAM INTO AN APPLE ///
TYPE ‹RTOSOHO› THEN PRESS ‹RETURN›
3. TYPE ‹R›, ‹Space›, ‹+S›, ‹Space›, ‹PE›, ‹Space›, ‹X›, THEN PRESS ‹RETURN›
OBSERVE:
a. THAT THE INTERRUPTER ARM STEPS THROUGH EACH TRACK FROM 0 TO PARK
b. IF AN ERROR OCCURS THE PROGRAM STOPS WITH THE SECTOR SHOWN ON THE CRT
4. IF AN ERROR OCCURS AND THE PROGRAM STOPS RECORD THE SECTOR ON A BAD SECTOR LIST FOR USE IN THE DIAGNOSTIC PROCEDURE
5. CONTINUE THE PROCEDURE DESCRIBED ABOVE UNTIL YOU HAVE RECORDED 10 BAD SECTORS OR UNTIL THE INTERRUPTER ARM HAS GONE FROM TRACK 0, TO PARK POSITION, TO TRACK 0 AGAIN
NOTE:
ALL O's ARE ZERO's
YES
GO TO DP FLOWCHART IN THIS SECTION

NS2.1 The firmware program in the system Z8 waits approximately 20 seconds after a successful powerup (a successful powerup is indicated by the Power OK signal becoming active and causing the Ready lamp to extinguish) before it initiates the Scan operation. During Scan operation the Z8 will cause the following things to occur.

Note: Turn off the Pro-File and gently position the interruptor arm to the Park position (if it is not already there). Then turn on the Pro-File while you observe the following.

The interruptor arm will move to approximately the center of its travel and pause there briefly while the spares table is read from track 77 on disk surfaces 2 or 3.

If there is a problem which disables the Pro-File from being able to read anything, then this is the first place that it would be evident.

If the Z8 is unable to read sector headers on track 77, then the interrupter arm may go to track 0 and back to 77 to try again. If it still can't read sector headers it may go to track 155 (Park position) and back to track 77 to try again to attempt read the spares table. If it still can't read the spares table the Z8 will abandon the Scan operation and move the interruptor arm to Park position.

(If you would like a detailed description of the Scan operation, or further information on the spares table, error recovery routines, the Pro-File's HDA format, etc. refer to the descriptions in the Appendices Section of this manual.)

**(Now return to the point in the flowchart which referred you to this discussion.)**

NS2.2 If the Seek to track 77 was successful (as described above in NS2.1),then the read circuitry must be at least marginally OK, so the Z8 will go to track 0 to begin to read each sector in sequence beginning with sector 0. During this time the Ready lamp will blink. If there is a problem in this procedure the Pro-File firmware may go to an error recovery routine.

(If you would like a detailed description of the Scan operation, or further information on the spares table, error recovery routines, the Pro-File's HDA format, etc. refer to the descriptions in the Appendices Section of this manual.)

**(Now return to the point in the flowchart which referred you to this discussion.)**

# DP - DIAGNOSTIC PROCEDURE

**NOTE:** The Diagnostic Procedure (DP) flowchart begins on page 1.22. However if this is your first time through this procedure, it is strongly recomended that you read the following introduction.

**Introduction:**

The main objective of this procedure is to familiarize the technician with some common failure modes within the Pro-File electronics. Each of these modes usually shows up as an alteration, of the analog waveform of the sector being read from the HDA.

The modified patterns usually do not reflect actual physical damage to the disc surface, but rather a problem in the Pro-File electronics.

The technician's job will be to examine the faulty sector's analog signal as it is being read to determine which module within the Pro-File caused or is causing the failure.

The faulty sector's analog signal waveform can be monitored directly by placing oscilloscope probe(s) on either Test Points 1 & 2 (TP1 & TP2 are the same signal differentiated) on the Analog PCB and externally triggering the scope with the Index signal at TP9.

An easy way to access these test points is to remove the metal plate located underneath the Pro-File, and tilt the Pro-File up on its side to expose the Analog PCB (refer to page 2.22 for the location of the Test Points). This way the Pro-File can be checked quickly with a minimum of disassembly.

Following this introduction are examples of analog signals PCB taken on TP1 & TP2 along with the VCO charge pump data locking error voltage at TP8.

The signal read at either TP1 or TP2 is the analog data read directly from the head after passing the data through a preamplifier, lo-pass filter, and automatic gain control circuit.

The signals at TP1 and TP2 are really just head signals amplified by the circuitry on the Analog PCB. A loss of signal at these test points may indicate that there is a problem with the connection between the HDA and Analog PCB, or the Analog PCB circuitry.

(continued on the next page)

The signal obtained from TP8 is the feedback voltage that a Phase Locked Loop (PLL) control circuit uses to lock to the analog data signal on the HDA.

The feedback either increases or decreases the voltage to a **Voltage Controlled Oscillator** (VCO) causing it to increment or decrement its output frequency thereby syncing that frequency to that of the data being read.

When the Pro-File is idle, the VCO locks to about 20 Mhz, or twice the Controller PCB clock frequency (there is very little signal at TP8).

When reading, the frequency varies in proportion to the data frequency written to the disc.

So, whenever the Pro-File is reading the data from the HDA, the signal will change in amplitude to reflect data on the disc. (refer to page 1.26, Example of Normal VCO charge pump Signal [TP8 voltage])

## Possible Problems:

**A. Z8 microprocessor**
Of the problems existing in the Pro-File, most of them can be attributed to the system Z8 microprocessor on the Controller PCB. (Refer to page 1.5, part 1.1).

The older system Z8 was a "piggyback" type chip, and the new version is the masked system Z8.

The masked version is a much improved version less likely to fail over a normal Pro-File lifetime, yet, there is small percentage of fallout within these chips too.

One malfunction that commonly occurs is when the Z8 turns on the write circuitry while seeking to a different track. (Refer to the following pages on Damaged or Cleared Data Areas)

(continued on the next page)

## Introduction: (continued)

**Possible Problems:** (continued)

### B. Controller and Analog PCB Upgrades

In the past some lines on the Controller and Analog PCBs were being spuriously activated. Sometimes this would cause the Z8 to go into its write routine when it was supposed to be seeking or idle.

The Controller and Analog PCB upgrade procedures (described in the Service Procedures Section), were designed to be a solution to these problems.

### C. Controller PCB

The Pro-File Controller PCB functionally provides control signals to the Analog PCB and HDA to move the heads to the proper track, select the proper sector, channel data, and monitor error conditions during a read or write.

If a malfunction occurs in any of these functions, the Controller PCB can be suspected as the bad module. However, do not forget to verify the Z8 microprocessor first.

### D. Analog PCB

TP1

There are 2 main Analog PCB problems:

1. PLL (Phase Lock Loop) problems may show up as an abnormal VCO (Voltage Controlled Oscillator) charge pump signal at TP8 when the analog data signal at TP2 and TP2 appears normal. In this case, the PLL circuitry would not be able to lock to the analog data signal coming from the HDA. (Refer to page 1.40, Example of Abnormal VCO charge pump).

2. AGC (Automatic Gain Control) circuitry problems may cause the analog data signal to be low or non-existant at TP1 and TP2. (Refer to page 1.42, Example of Abnormal AGC signal)

### E. Hard Disk Assembly (HDA)

Of the many possible problems which can occur on the HDA, there are four major ones.

(continued on the next page)

Possible Problems:
E. Hard Disk Assembly (HDA) (continued)

1. **Media damage** (Refer to page 1.38, Example of Bad Media) can be found by finding an area on the media with a loss of signal (not a sector mark), where repeated attempts at rewriting data does not return the area to normal. (Rewriting the sector can be accomplished with the Big Debugger program, using the <W> command, refer to page 2.40 for instructions)

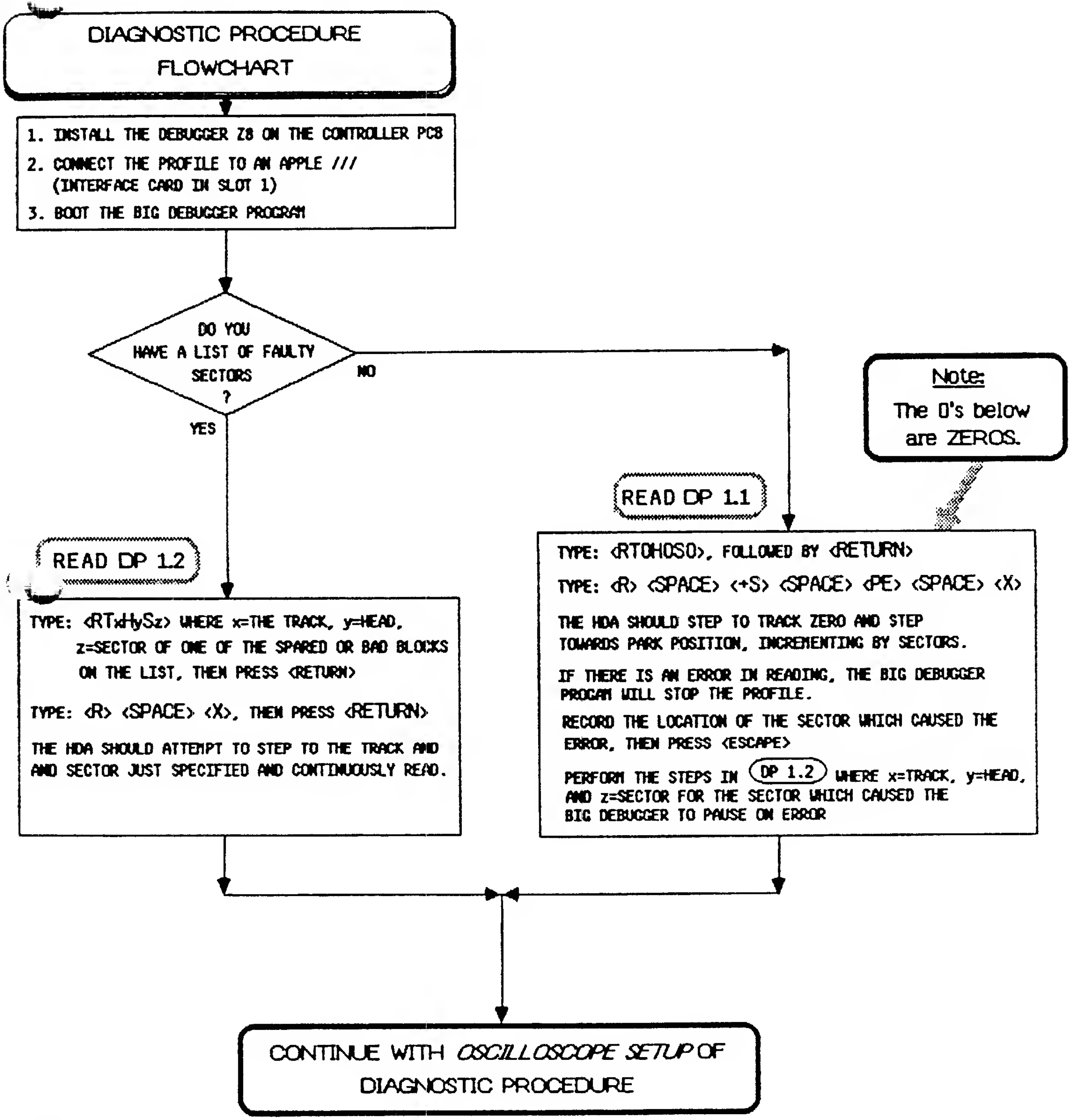
   There also can be damage to the media where one of the disc heads has struck the surface of the disc. Remember that there is a space for 32 bad sectors in the Spares Table, so a few bad sectors existing due to a media problem is acceptable and a normal part of Pro-File operation.

2. **Motor Speed problems** usually occur because of a defective Motor Control PCB on the HDA. A widely oscillating speed might adversely affect the operation of the Pro-File. The analog signals will be present at the Test Points, but the analog to digital circuitry will probably not be able to lock to the data on the HDA. And the Pro-File probably will not pass reformatting without errors occurring.

3. **Disc Head problems** are usually limited to a complete loss of signal at one or more of the heads. It is because of damage to the heads or a bad connection to the heads. Either way, the HDA needs replacement, as there is no way to repair a problem internal to the HDA in the field.

4. **Stepper Motor problems** may be caused by a bad connection between the Controller or Analog PCB's, or a bad stepper motor winding. Either way, the stepper will not move smoothly or have accuracy at any track step. To confirm the problem use the Read command from the Big Debugger program in the Service Procedures Section to perform a read on some track other than where the heads are now. If the interrupter arm rotates in the direction opposite of the target track, or shakes back and forth there may be a problem with the stepper motor.

   Another problem that can occur is stepper motor **hysteresis**. Hysteresis is where a magnetic field is built up inside the stepper motor coils causing the motor to settle with the head positioned at a slightly off track position. In this case the HDA should be replaced since this is a track alignment problem internal to the HDA and not repairable by the technician.


DIAGNOSTIC PROCEDURE FLOWCHART
1. INSTALL THE DEBUGGER Z8 ON THE CONTROLLER PCB
2. CONNECT THE PROFILE TO AN APPLE ///
(INTERFACE CARD IN SLOT 1)
3. BOOT THE BIG DEBUGGER PROGRAM
DO YOU HAVE A LIST OF FAULTY SECTORS ?
NO
YES
Note:
The 0's below are ZEROS.
READ DP 1.1
TYPE: <RT0H0S0>, FOLLOWED BY <RETURN>
TYPE: <R> <SPACE> <+S> <SPACE> <PE> <SPACE> <X>
THE HDA SHOULD STEP TO TRACK ZERO AND STEP TOWARDS PARK POSITION, INCREMENTING BY SECTORS.
IF THERE IS AN ERROR IN READING, THE BIG DEBUGGER PROGAM WILL STOP THE PROFILE.
RECORD THE LOCATION OF THE SECTOR WHICH CAUSED THE ERROR, THEN PRESS <ESCAPE>
PERFORM THE STEPS IN DP 1.2 WHERE x=TRACK, y=HEAD, AND z=SECTOR FOR THE SECTOR WHICH CAUSED THE BIG DEBUGGER TO PAUSE ON ERROR
READ DP 1.2
TYPE: <RTxHySz> WHERE x=THE TRACK, y=HEAD, z=SECTOR OF ONE OF THE SPARED OR BAD BLOCKS ON THE LIST, THEN PRESS <RETURN>
TYPE: <R> <SPACE> <X>, THEN PRESS <RETURN>
THE HDA SHOULD ATTEMPT TO STEP TO THE TRACK AND AND SECTOR JUST SPECIFIED AND CONTINUOUSLY READ.
CONTINUE WITH OSCILLOSCOPE SETUP OF DIAGNOSTIC PROCEDURE

DP1.1 If you do not have a list of faulty sectors, then the interrupter arm must have spent 1 minute or more over a track during Scan. This probably means that the Pro-File had difficulty reading a sector or sectors on that track. By entering the commands specified at this step in the flowchart into the Big Debugger program, you will cause the Big Debugger program to read every sector in sequence and stop in the event of an error.

When the program stops the test operation, the heads will be positioned over the problem track, and the head for the disk surface containing the problem track will be enabled. This means that the analog signal from that track should continuously be sent to TP1 and 2 on the Analog PCB. Perform the steps in the DP1.3 procedure to view the signal from this track and determine if its display can provide you with a clue as to what the problem is.

If you don't feel that the display of this track is providing you with the syptoms you need to diagnose the problem, you can press the <SPACE> bar to cause the Big Debugger program to test the rest of the sectors until it finds another error. View that tracks signal for symptoms in the same way .... etc.

DP1.2 By entering the commands specified at this branch in the flowchart into the Big Debugger program you will cause the Big Debugger program to read one of the sectors that you determined earlier in the flowchart might contain clues to electronic problems in the Pro-File.

While the program continuously reads the specified sector, the heads will be positioned over the problem sector's track, and the head for the disk surface containing the problem sector will be enabled. In DP1.3 you will find a procedure to view the signal from this track.

If you position your timebase delay hilight over the analog data read signal for this period and enter timebase delay mode on your oscilloscope you will see an expanded display of the questionable sector. Compare the display of the faulty sector by itself with the faulty sector examples later in this procedure to help you find the problem.

If you don't feel that the display of this sector is providing you with any of the symptoms described in DP1.3, you can enter the commands necessary to have the Big Debugger program continuously read the next faulty sector on your list. View that sectors signal for symptoms in the same way .... etc.

DIAGNOSTIC PROCEDURE
OSCILLOSCOPE SETUP

READ DP 1.3

## TO VIEW THE TRACK BEING READ:

1. TURN ON THE OSCILLOSCOPE AND ALLOW IT TO WARM UP FOR 15 MINUTES
2. *INITIALLY* SET CHANNEL A (OR 1) ON THE OSCILLOSCOPE TO THE FOLLOWING:
   A. VOLTS PER DIVISION CONTROL SETTING TO 1 VOLTS/DIV
   B. AC COUPLING
   C. CONNECT TO HDA ANALOG DATA - TP1 OR 2 ON ANALOG PCB (GROUND THE PROBE)
3. SET CHANNEL B (OR 2) TO:
   A. 0.5 VOLTS/DIV
   B. AC COUPLING
   C. CONNECT TO HDA VCO SIGNAL - TP8 ON ANALOG PCB (DO NOT GROUND THE PROBE)
4. USE EXTERNAL TRIGGER AND SET TIMEBASE TO:
   A. 2 mSEC/DIV
   B. CONNECT EXTERNAL TRIGGER TO INDEX PULSE - TP1 ON CONTROLLER PCB
   C. AUTO TRIGGERING - ADJUST TRIGGER LEVEL TO LOCK SIGNAL ON SCOPE

*NOTE:* IF THERE IS NO INDEX PULSE ON TP1 (CONTROLLER PCB), TRY USING TP9 (ON ANALOG PCB). IT IS ACTUALLY THE INDEX SIGNAL FROM THE HDA, IF IS NOT PRESENT, CHECK THE INDEX SENSOR ADJUSTMENT DESCRIBED IN SECTION 2

*OBSERVE:* THE SIGNAL YOU ARE VIEWING SHOULD BE SIMILAR TO THAT SHOWN IN THE PHOTOGRAPH ON THE OPPOSITE PAGE.

## TO VIEW THE SECTOR BEING READ:

5. WHILE IN THE MAIN TIMEBASE, POSITION AND ADJUST THE DELAYED TIMEBASE HIGHLIGHT OVER THE PERIOD OF THE VCO CHARGE PUMP SIGNAL THAT IS ACTIVE (PROBABLY LOW AND OSCILLATING, SIMILAR TO THE LOWER SIGNAL IN THE PHOTOGRAPH ON THE OPPOSITE PAGE).
6. ENTER THE DELAYED TIME BASE TO VIEW THE QUESTIONABLE SECTOR

*OBSERVE:* THE SIGNAL YOU ARE VIEWING MAY BE COMPARED WITH THE NORMAL SIGNAL ILLUSTRATION SHOWN ON PAGE 1.28.

7. VIEW THE EXAMPLE SIGNALS IN THE FOLLOWING PAGES TO DETERMINE A PROBLEM WITHIN THE PROFILE

CONTINUE WITH DIAGNOSTIC PROCEDURE
SIGNAL EXAMPLES

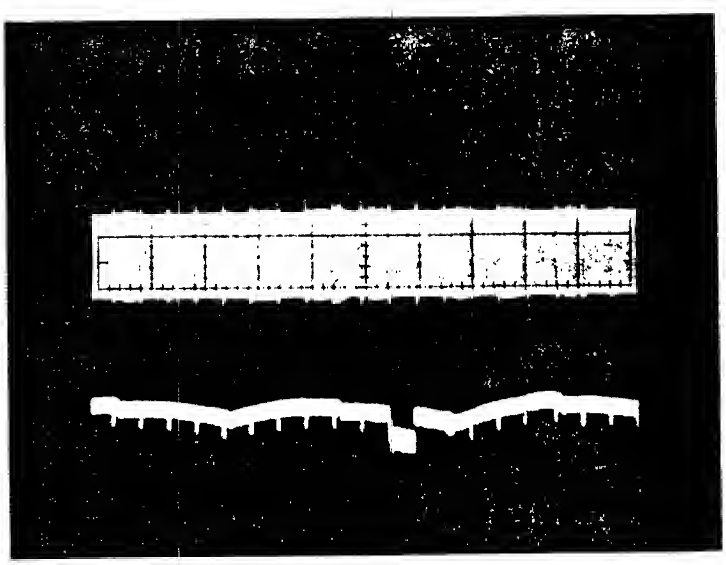
DP1.3 At this point in the flowchart a head should be enabled over a track containing a faulty sector. On your oscilloscope display you should see a signal similar to that in the figure shown below.

**If you had a list of faulty sectors,** then the Big Debugger program should be continuously reading a faulty sector. Notice the period in the VCO charge pump signal where it is low and oscillating. The sector where the VCO charge pump signal goes low is the sector that is being read.

If you position your delay trigger hilight over the analog data read signal for this peri,od and enter delay trigger mode on your oscilloscope you will see an expanded display of the questionable sector. Compare the display of the faulty sector by itself with the faulty sector examples later in this procedure. If you find one that is similar, read the corresponding explanation and if you wish perform the recommended module replacement.

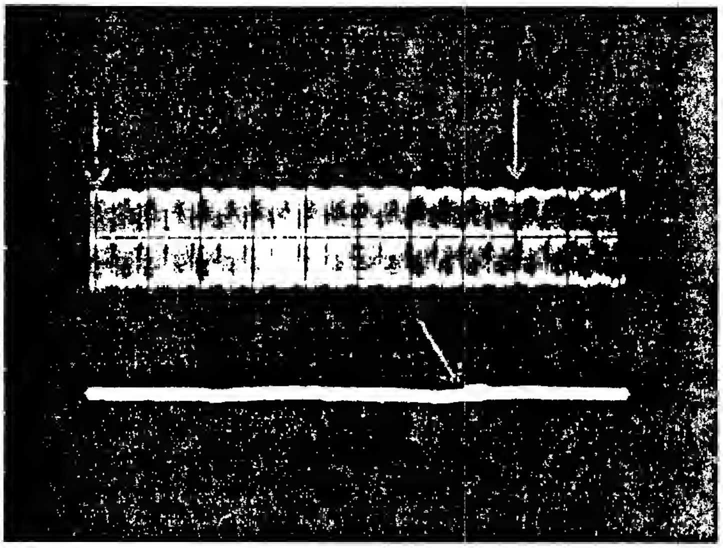
**If you are viewing a questionable track and you don't know which sector is bad,** then use the delay trigger function on your oscilloscope to view the sectors individually to determine why the Pro-File had a problem with this track.

**Note:** A sector mark (sometimes called sector gap) separates each sector as shown below. If you would like information on the format used for the Pro-File refer to the Pro-File HDA description in section 3.



# Diagnostic Procedure

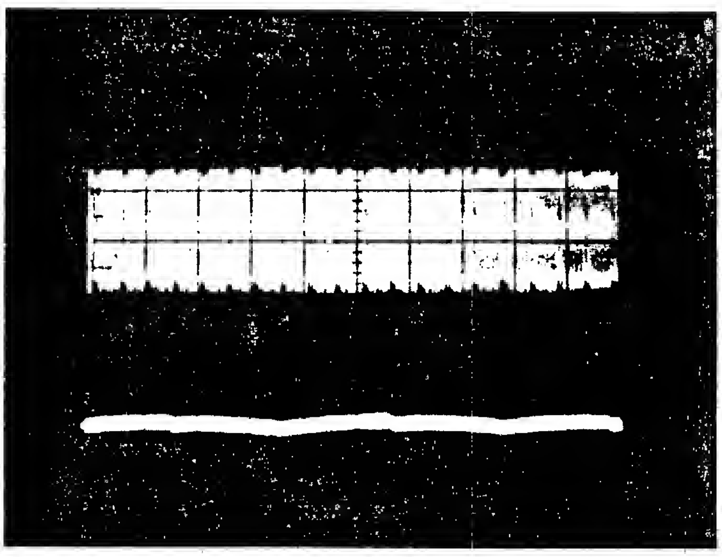
Example of a Normal Track



TP1 displays a view of a track of data. An entire track is shown between the arrows. Amplitude is 2 v peak to peak.

TP8 (VCO) is shown locking in to read a sector by the lower arrow.

Scope Settings:
TP1 - 1 volt/div
TP8 - .5 volt/div
Timebase: 2 msec/div



TP1 displays another look at a normal track with a higher amplitude of 2.4 v. Note that there are 16 areas of no signal corresponding to the sector marks.

TP8 (VCO) is not used here.

Scope Settings:
TP1 - 1 volt/div
TP8 - .5 volt/div
Timebase: 2 msec/div

Examples of a Normal Track

The amplitude voltage of an analog data signal from a normal track can vary depending on the physical location of the track, the Analog PCB, and what actual data has been written to the HDA.

The photos shown at the left are two characteristic normal tracks which show a **possible** variation in amplitude voltage. The upper photo displays an amplitude of about 2 volts peak to peak, the lower amplitude 2.4 volts.

Each track contains 16 sectors separated by a sector mark, but at this timebase the photo actually shows more than the 16 sectors.

This is because the period of signal displayed at this timebase is longer than the period of time that it takes to read one complete track, so the beginning of the same track is displayed as the disk begins its next rotation.

One complete track is shown between the arrows.

**Note:** Careful examination of the upper photo shows the VCO charge pump circuitry locking in on the sector indicated by the lower arrow.

## Examples of a Normal Sector

As explained in the previous example of a normal track, the amplitude voltage of an analog data signal from a normal track can vary depending on the physical location of the track, the Analog PCB, and what actual data has been written to the HDA.

The illustration at the left shows a typical view of a normal sector's analog signal. The amplitude of a sector can vary from about 1.1 volts to over 2 volts.

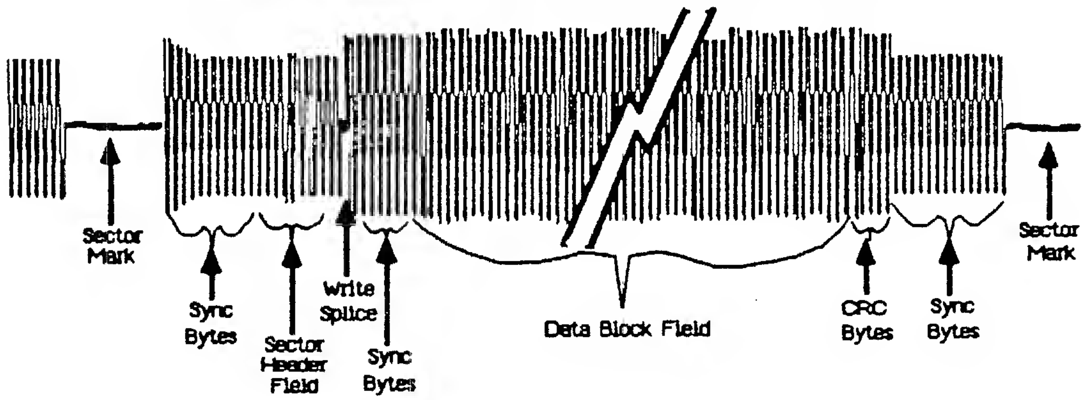
The flared "bell" shape at the beginning of each sector, is a normal characteristic caused by the AGC (Automatic Gain Control) circuitry as it adjusts for the gain of the analog read signal from the head. If the bell shape is missing, the technician might suspect a faulty Analog PCB.

The Sync bytes and Sector Header field at the beginning of the sector are written during formatting, and should never be written over after formatting. The Write Splice is the point at which the Pro-File will normally begin to write a data block into the sector.

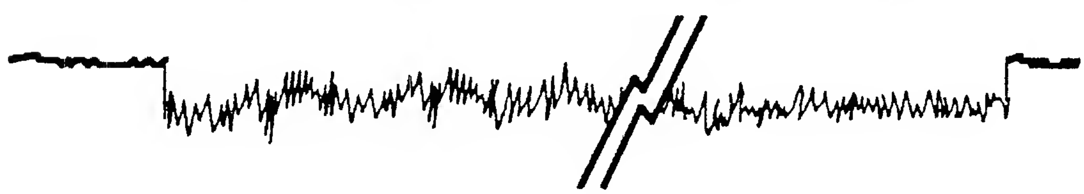
When the Pro-File reads a data block from a sector the data block field may not be in exact sync with the Sector Header field, so additional sync bytes are needed after the Write Splice, for the Pro-File to sync to the data field.

Notice that the VCO charge pump signal at TP8 goes low only for the sector being read. The oscillations that occur while the charge pump signal is low reflect the changes the VCO (Voltage Controlled Oscillator) makes to sync with the clock in the analog data signal read from the HDA (TP 1 or 2).

## EXPANDED VIEW OF ONE SECTOR (TP 1 or 2)




## EXPANDED VIEW OF VCO CHARGE PUMP SIGNAL (TP8)



THE OSCILLATIONS SHOULD OCCUR ONLY FOR THE SECTOR BEING READ. THE VOLTAGE LEVEL THEY OCCUR AT DEPENDS ON THE SPEED ADJUSTMENT ON THE HDA MOTOR CONTROL PCB (THE ILLUSTRAION DEPICTS A SIGNAL RIDING ON A NEGATIVE LEVEL, AS MOST WILL)

Example of a Normal VCO charge pump Signal

As explained in this flowchart's introduction, the VCO charge pump signal at TP8 enables the VCO (Voltage Controlled Oscillator) on the Analog PCB to synchronize to the data written on the disk.

The voltage level at TP8 causes the VCO to increase or decrease its output frequency.

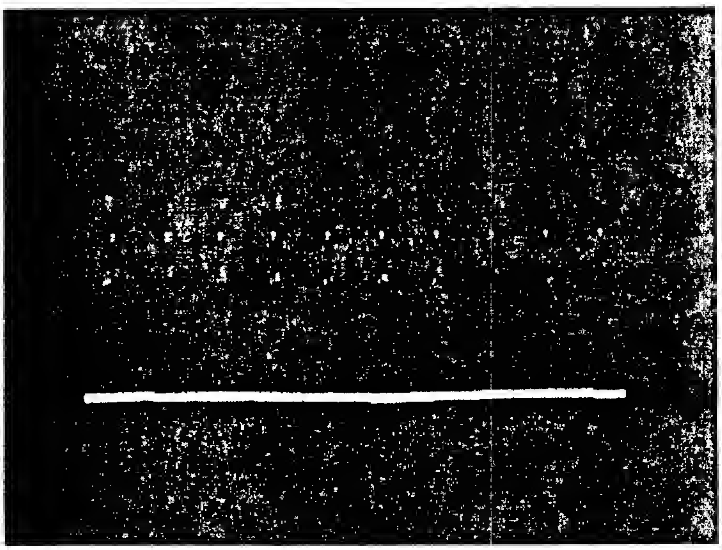
When the Z8 wishes to read a sector on a track this signal will go low and then oscillate. This means it is now controlling the correction of the VCO as needed during the reading of the sector.

After the sector is read, the Z8 will direct the signal to go high again since there is no longer any data to be synced to.

The upper photo shown at the left shows a view of about half of a normal track. The Pro-File was told (using the Big Debugger Program) to read the sector continuously. No read errors occurred despite the large amplitude signal seen on TP8.

The lower photo displays an enlarged view of the sector being read above. Note that the changes in peaks in the data signal at TP1 correspond to the peaks in the VCO charge pump signal in TP8. An even larger view of the signals would show this more clearly.

# Diagnostic Procedure

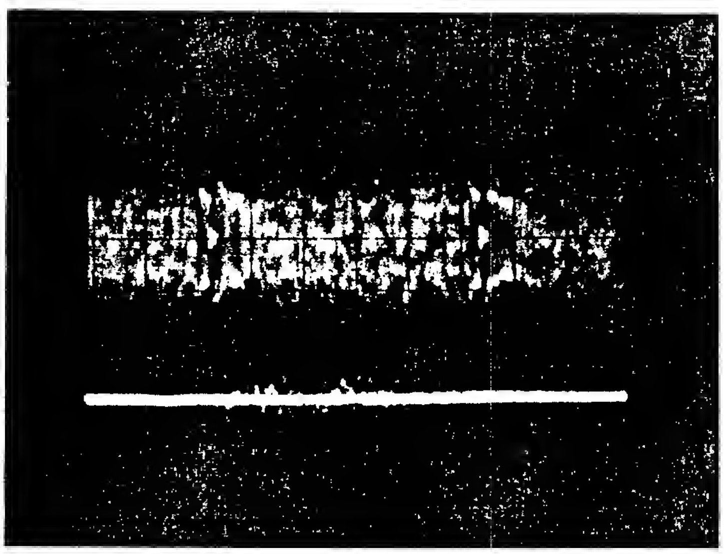


Example of a Normal VCO Signal

TP1 displays a partial view of a track of data. The Profile has been told to read the sector of data shown by arrow.

TP8 (VCO) shows a signal corresponding to the sector read. This signal "locks" to the data.

Scope Settings:
TP1 - 1 volt/div
TP8 - .2 volt/div
Timebase: 1 msec/div



TP1 displays a larger view of the sector being read.

TP8 (VCO) shows a more detailed look at the signal produced at TP8. Each increase and decrease in signal amplitude corresponds to the data signal at TP1.

Scope Settings:
TP1 - 1 volt/div
TP8 - .2 volt/div
Timebase: .2 msec/div

Example of Damaged Track

As described in the Pro-File HDA Format description in section 3, sector marks divide each track into 16 separate sectors. The Controller PCB expects the sectors to be in a certain location with respect to the sector marks.

The upper photo shown at the left shows an entire track of data with uneven length sectors (they should all be the same length), and extra pulses (TP1). A normal sector would occur where the VCO charge pump (at TP8) shows the amplitude in the negative direction (down).

The Pro-File was instructed to read all the sectors of the track with the Big Debugger program, what is shown is every other sector being read. The lower photo shows an enlarged view of the track analog signal displaying areas which appear to be similar to a normal sector, but are actually damaged.

There are extra areas of no signal similar to a normal sector mark at the end of some of the sectors, and areas with multiple sector marks at the beginning of the sector (refer to lower arrow).

At this point, the technician would normally suspect the system Z8 as the cause of the damaged tracks. This is because the Z8 has historically been the most common failed component in the Pro-File. Yet, this Pro-File already had a masked version of the system Z8 installed on the Controller PCB.

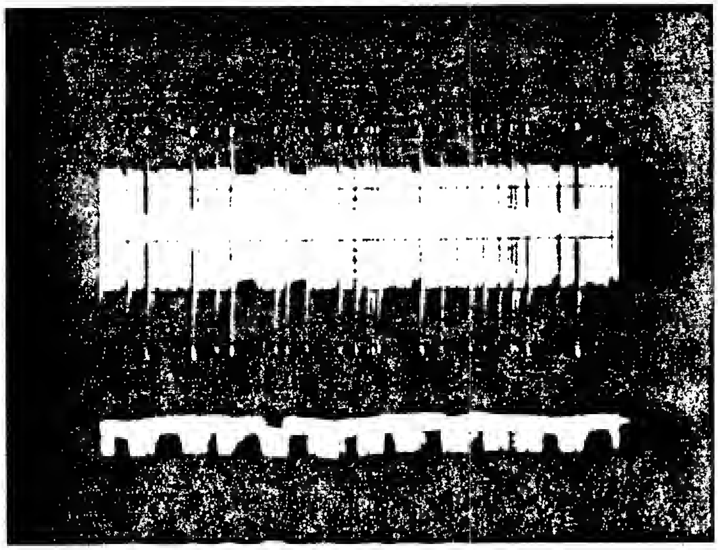
So it is a possibility that the Controller PCB is really at fault, not the Z8. Since the Z8 had already been replaced during the upgrade procedures, it was decided to reformat the HDA (correcting the track damage in the format), and run FST for 15 minutes to see if the track damage would reoccur. A replacement system Z8 was installed, the system upgraded, and the HDA reformatted.

After running FST for 10 minutes, the Pro-File began to produce errors: (Refer to page 2.37 for a list of errors and criteria for failure)

```
04 00 00 00
05 00 00 00
15 80 00 00
```

The Pro-File was stopped and the Controller PCB replaced. (The original Z8 was reinstalled into the new Controller PCB) and the 15 minute FST rerun. No additional errors occurred even after 48 hours, so it was assumed that the Controller PCB somehow produced the damaged tracks.

# Diagnostic Procedure

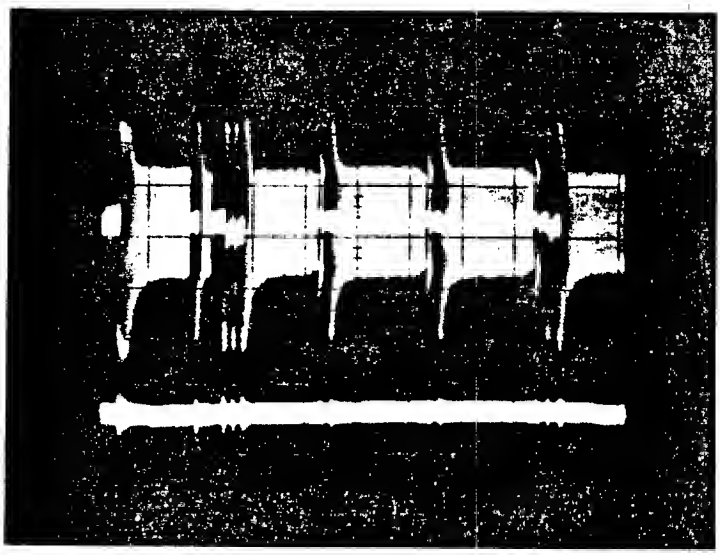


**Example of a Damaged Track**

TP1 displays a view of a track of data. There appears to be extra sectors if you count the extra peaks.

TP8 (VCO) attempted to lock to the data present on the track, but was unable to confirm any good sectors.

Scope Settings:
TP1 - 1 volt/div
TP8 - .5 volt/div
Timebase: 2 msec/div

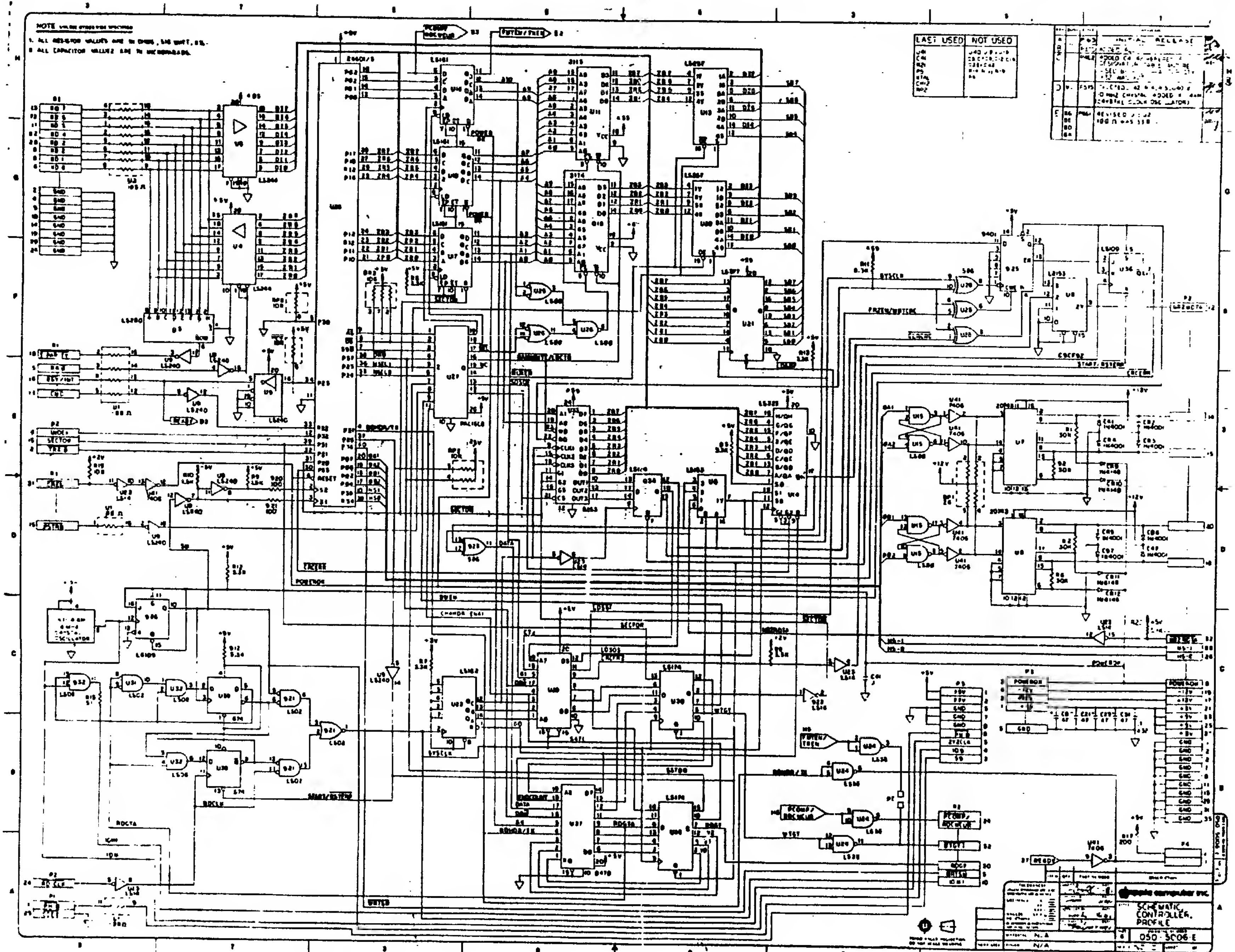


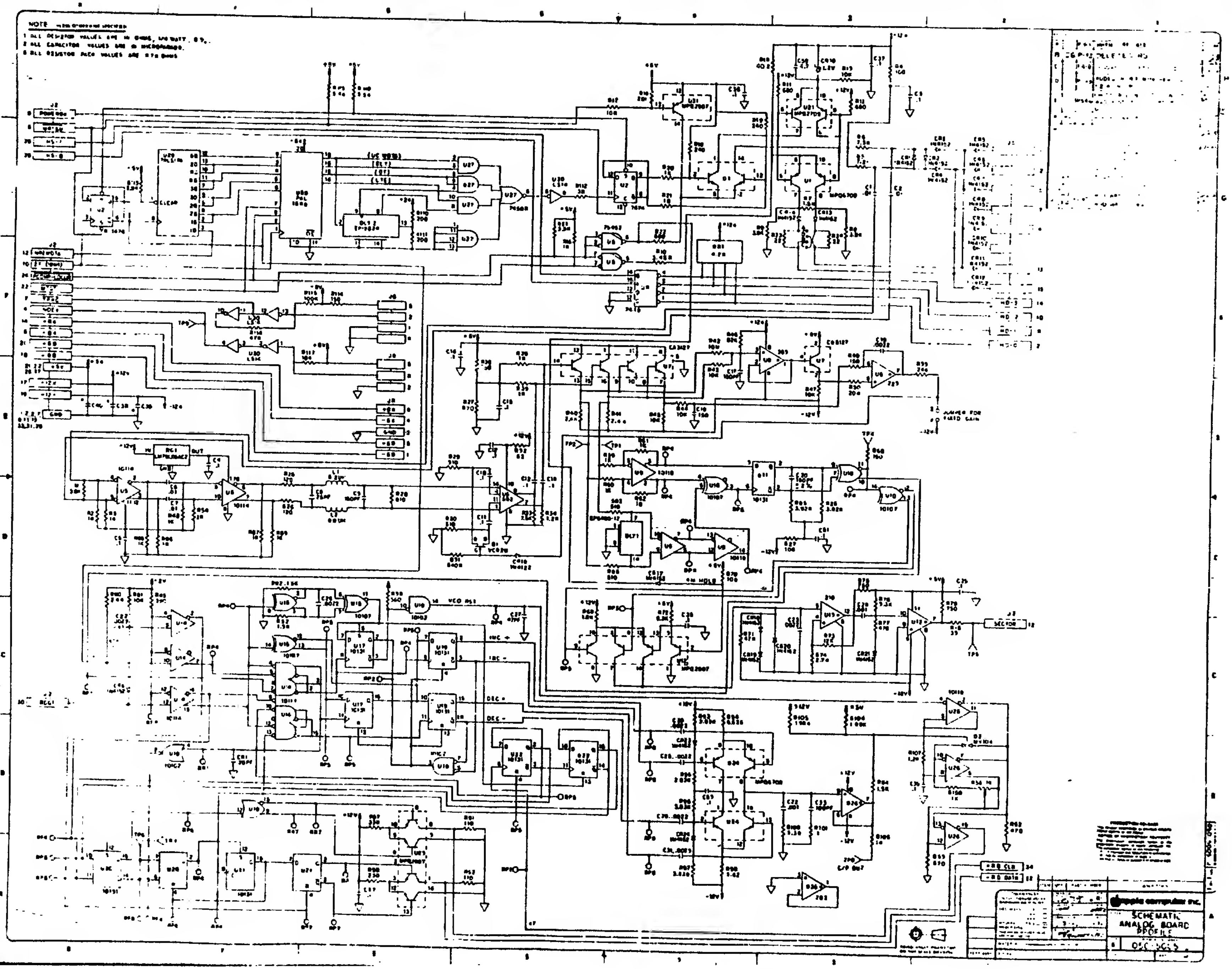
TP1 displays a closer view of some of the sectors of the track. Several sectors appear to be normal, but have actually been damaged.

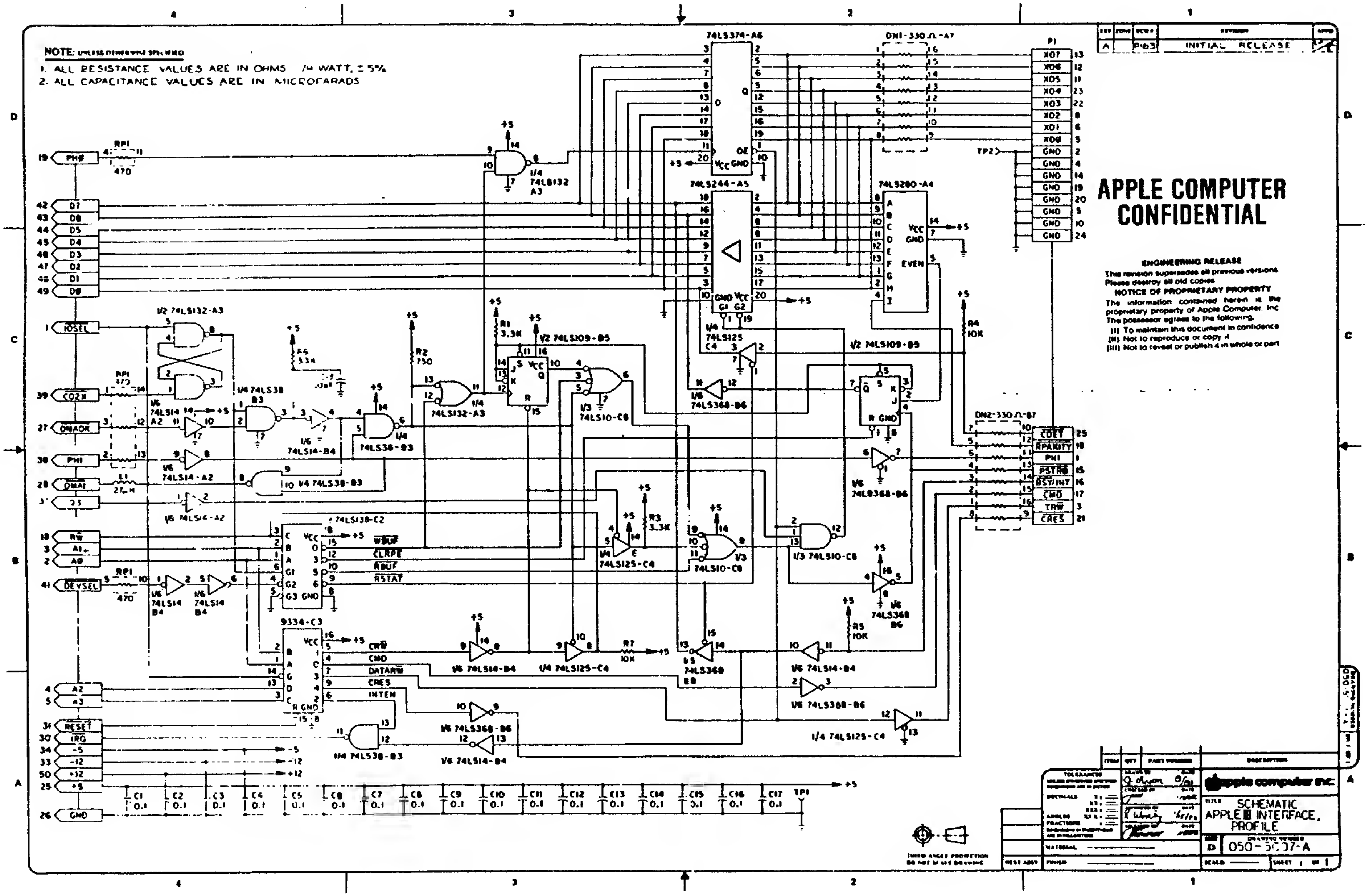
TP8 (VCO) could not lock to the damaged the sectors.

Scope Settings:
TP1 - 1 volt/div
TP8 - .5 volt/div
Timebase: .5 msec/div

Suspect:
1. System Z8
2. Controller Board
3. HDA


NOTE
1. ALL RESISTOR VALUES ARE IN OHMS, 1/4 WATT, 5%.
2. ALL CAPACITOR VALUES ARE IN MICROFARADS.
LAST USED
NOT USED
INITIAL RELEASE
apple computer inc.
SCHEMATIC, CONTROLLER, PROFILE
050-5006 E


apple computer inc.
SCHEMATIC
ANALOG BOARD
PROFILE
SECTOR
JUMPER FOR FIXED GAIN


NOTE: UNLESS OTHERWISE SPECIFIED
1. ALL RESISTANCE VALUES ARE IN OHMS 1/4 WATT, ±5%
2. ALL CAPACITANCE VALUES ARE IN MICROFARADS
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ENGINEERING RELEASE
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A P163 INITIAL RELEASE
74LS374-A6
74LS244-A5
74LS280-A4
DN1-330Ω-A7
DN2-330Ω-B7
9334-C3
74LS138-C2
P1
PHØ
D7
D6
D5
D4
D3
D2
D1
DØ
IOSEL
CO2X
DMACK
PHI
DMAI
RW
A1
AØ
DEVSEL
A2
A3
RESET
IRQ
-5
-12
+12
+5
GND
XO7
XO6
XO5
XO4
XO3
XO2
XO1
XOØ
CDET
RPARITY
PSTRB
BSY/INT
CMD
TRW
CRES
WBUF
CLRPE
RBUF
RSTAT
CRW
DATARW
INTEN
apple computer inc
SCHEMATIC
APPLE III INTERFACE,
PROFILE
D 050-5007-A

Example of Damaged Areas within a Track

As described in the Pro-File HDA Format, page 3.11, sector marks divide each track into 16 separate sectors. The Controller PCB expects the sectors to be in a certain location with respect to the sector marks.

The upper photo shown at the left shows an entire track of data between the two arrows with missing sector marks and other abnormal areas (TP1).

The damaged track was quickly found by using the Big Debugger program to scan from track 0 to park position, (type the command <R +T PE X>, refer to the Big Debugger description in section 2 if more instruction is needed).

The Debugger program stopped the heads at this track when it detected a read error. By looking at the signal at TP1, some abnormalities were seen.

The lower photo shows a enlarged view of a portion of the track in the upper photo. The arrow points to where a sector mark has been written over.

This kind of signal pattern is another probable characteristic of a system Z8 failure. The sector mark was written over and the data put down in such a way so that it could not be read again.

Once the sector mark information is damaged in this way, there is no possible way for the Pro-File to rewrite the sector mark without reformatting.

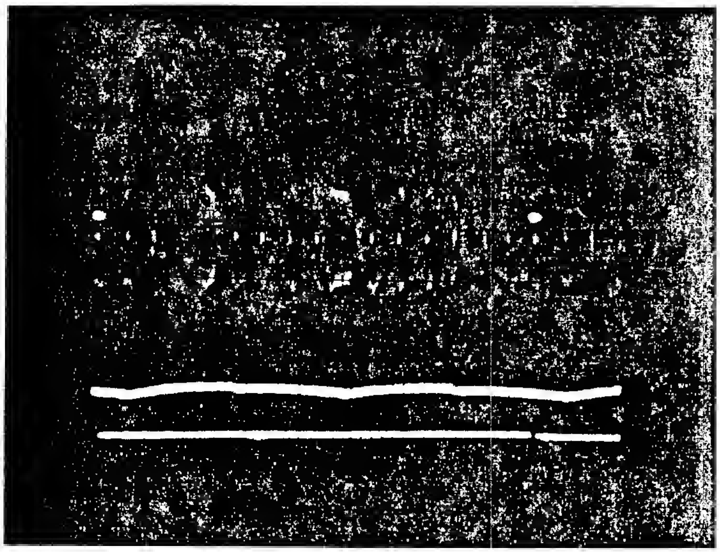
The diagnostics internal to the Pro-File would probably spare this area under normal circumstances. The HDA must be reformatted to establish the normal sector information (however, this will destroy any data).

During a scan after powering on, the interrupter stopped momentarily at this track location while the Z8 made attempts to read the damaged sectors.

The sectors on this track were not present in the spares table bad sector list after running the Quick Debugger program.

In a case such as this the only way to continuously find and read the faulty track is to run the Big Debugger program and have it pause on any error. At that point, look at the signal and try to determine the problem.

# Diagnostic Procedure

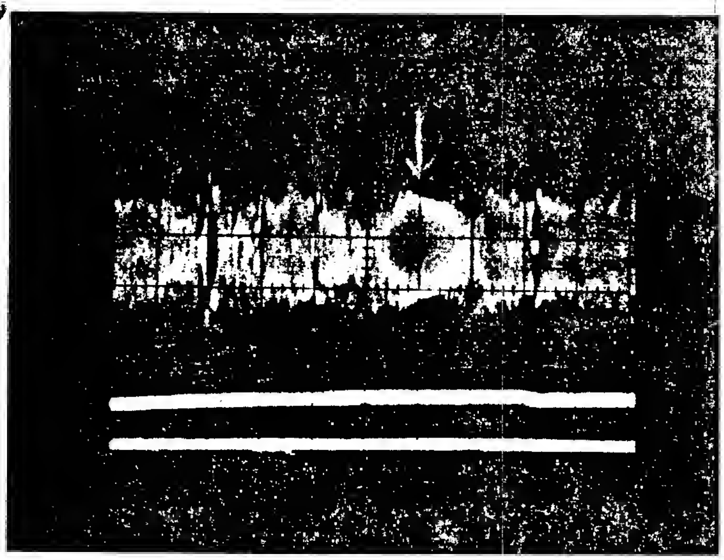


**Example of Damaged Data Areas on Track**

TP1 displays a view of a track of data. There are missing sector marks and other strange areas on the track.

TP8 (VCO) is not used here.

Scope Settings:
TP1 - 1 volt/div
TP8 - .5 volt/div
Timebase: 2 msec/div



TP1 displays a closer look at one of the areas of the damaged track. The arrow points to where a sector mark is missing.

TP8 (VCO) is not used here.

Scope Settings:
TP1 - 1 volt/div
TP8 - .5 volt/div
Timebase: .5 msec/div

Suspect:
1. System Z8
2. Controller PCB
3. HDA

Example of Damaged Track and Sectors

The upper photo shown at the left shows a partial track of data with one normal sector occurring in the center of the photo.

The other sectors have what appears to be an extra sector mark written in the middle. Not only is the extra sector mark in the wrong position, the width of the sector mark is about three times normal.

The Z8 became confused when reading this sector because of the extra sector marks.

The lower photo shows another track on the HDA with a similar problem (an extra apparent sector mark).

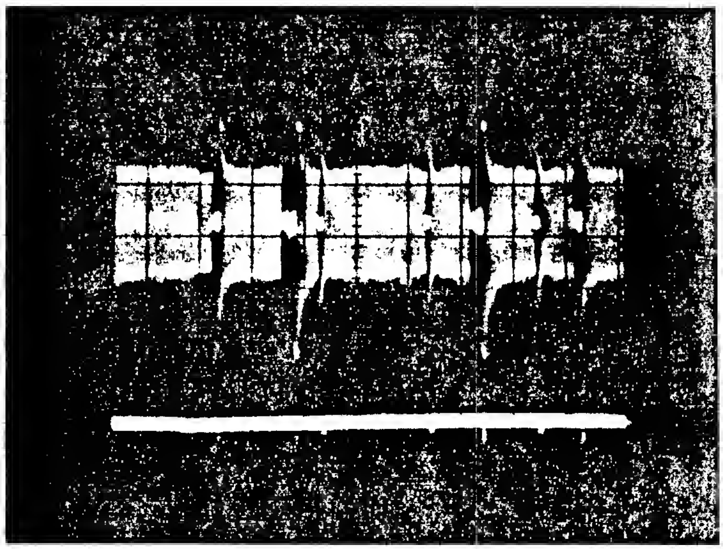
At this point, one should normally suspect the system Z8 as the cause of the damaged sectors.

The problem Pro-File originally had a piggyback system Z8 installed, so there was a very good chance that the Z8 would be the problem.

The Pro-File PCBs were upgraded and the HDA reformatted normally. A 15 minute FST run produced no errors, so the test was continued for 48 hours. No errors occurred.

(except an occasional read error - 08 00 00 00; refer to page 2.37 for a list of errors and how many of a type are acceptable)

# Diagnostic Procedure

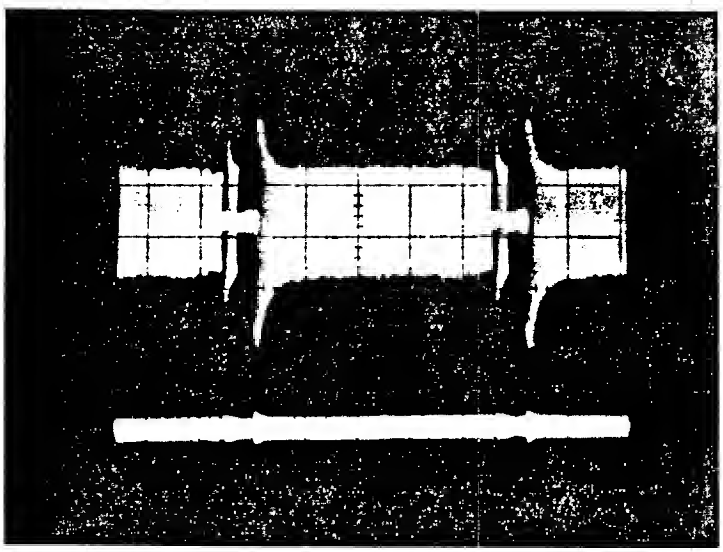


**Example of a Damaged Track and Sectors**

TP1 displays a partial view of a track of data. There is one normal sector of data shown by the arrow. The other sectors have been overwritten with an abnormal pulse in various places.

TP8 (VCO) could not lock to the abnormal sectors.

Scope Settings:
TP1 - 1 volt/div
TP8 - .5 volt/div
Timebase: .5 msec/div



TP1 displays a larger view of the damaged sector.

TP8 (VCO) is not used here.

Scope Settings:
TP1 - 1 volt/div
TP8 - .5 volt/div
Timebase: .2 msec/div

Suspect:
1. System Z8
2. Controller PCB

## Example of Cleared Data Areas on Track

The upper photo shown at the left shows an entire track of data between the two arrows with about 1/4 of the track damaged.

The sectors in the damaged area have been cleared to a continuous level AC signal by some unknown source, probably the system Z8. Both the sector marks and data areas are missing.

The lower photo shows another track on the same HDA which has been cleared completely of any data and sector marks.

Each signal displays a condition where the HDA wrote a continuous AC signal without using the sector marks as an indicator of where to write.

There is no way for the Pro-File to repair the damaged areas without the technician reformatting the HDA.

Chances are very good that the system Z8 functioned abnormally and caused the Pro-File to write over the data signal; so this would be a good choice for the bad module.

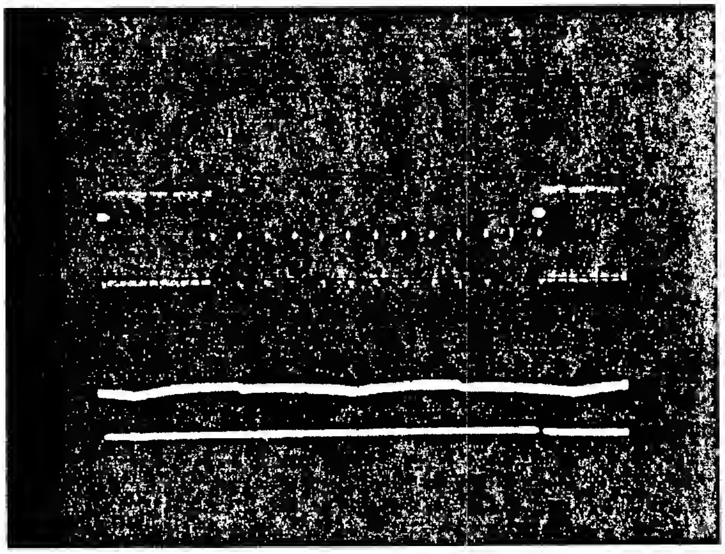
It is also possible that the Controller or Analog PCB could be the cause of the problem because there could have been a short which may have caused the write circuit to malfunction.

For example, a DC voltage shorted to one of the disc heads on the HDA, while the heads were positioned over a track might cause the head to perform a DC erase of the entire track.

This kind of erase would only take about 17 milliseconds to happen (one disc revolution). But if this happened, the signal would be a low amplitude signal, much like a continuous sector mark, etc.

# Diagnostic Procedure

Example of Cleared Data Areas on Track



TP1 displays a view of a track of data. About a 1/4 of the track has been wiped to a constant AC signal. There are no signs of data in this area.

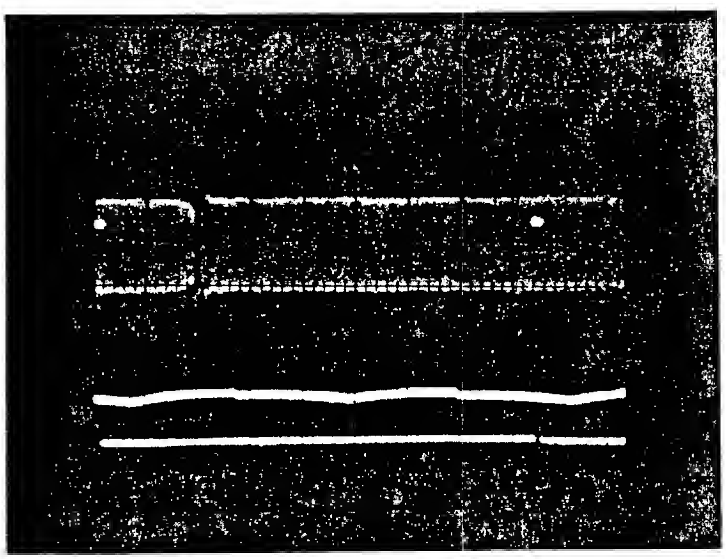
TP8 (VCO) is not used here.

Scope Settings:

TP1 - 1 volt/div

TP8 - .5 volt/div

Timebase: 2 msec/div



TP1 displays another track which has been completely cleared of any data accept for one small disturbance. An normal track would be between the arrows.

TP8 (VCO) is not used here.

Scope Settings:

TP1 - 1 volt/div

TP8 - .5 volt/div

Timebase: 2 msec/div

| Suspect: | |
|---|---|
| 1. System Z8 | 3. Analog PCB |
| 2. Controller PCB | 4. HDA |

Example of Cleared Data Areas on Track

The upper photo shown at the left shows an entire track of data between the two arrows with about 1/4 of the track damaged.

The sectors in the damaged area have been cleared to a continuous level AC signal by some unknown scurce, probably the system Z8. Both the sector marks and data areas are missing.

The lower photo shows another track on the same HDA which has been cleared completely of any data and sector marks.

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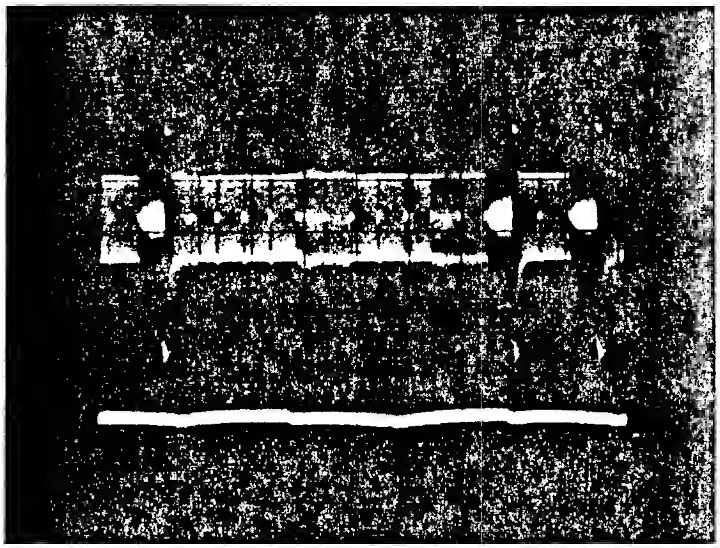
For example, a DC voltage shorted to one of the disc heads on the HDA, while the heads were positioned over a track might cause the head to perform a DC erase of the entire track.

This kind of erase would only take about 17 milliseconds to happen (one disc revolution). But if this happened, the signal would be a low amplitude signal, much like a continuous sector mark, etc.

# Diagnostic Procedure

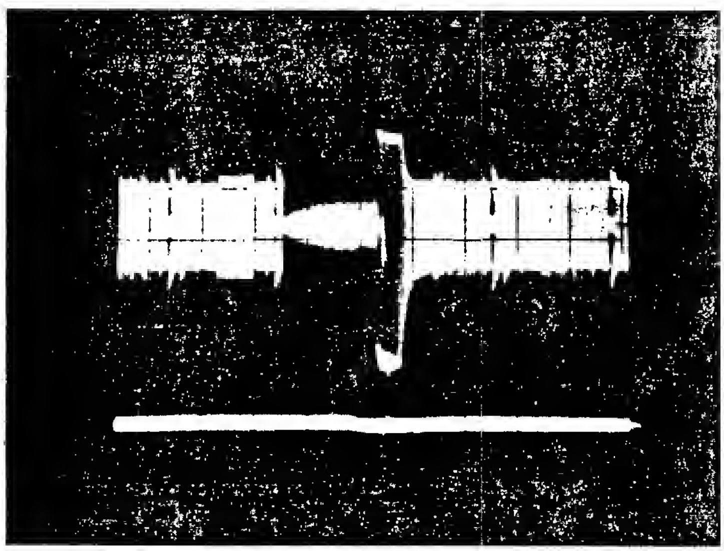
Example of Offtrack Signal



TP1 displays a view of a track of data. There are 3 sectors which have been damaged.

TP8 (VCO) was not able to lock on to this kind of abnormal data signal at TP1

Scope Settings:
TP1 - 1 volt/div
TP8 - .5 volt/div
Timebase: 2 msec/div



TP1 displays a closer view of some of the sectors of the track, including the bad area. The signal shows that two sectors have actually been damaged.

TP8 (VCO) is not used here.

Scope Settings:
TP1 - 1 volt/div
TP8 - .5 volt/div
Timebase: .5 msec/div

Suspect:
1. System Z8
2. Controller PCB
3. HDA

Example of Offtrack Signal

As described in the physical description of the Pro-File HDA format in section 3 of this manual, the data areas are written on the disc surfaces in tracks, and the Z8 performs the Seek routine to cause the stepper motor to move the heads over the target track to access data. The number of step pulses the Z8 sends to the stepper motor determines how far the head will move and so which track it will be over. (For an explanation of the Seek routine refer to the Firmware Routines description in section 3.) Because the control system is of open loop nature, (i.e. there is little feedback telling the Controller PCB where the disc heads are physically located) both mechanical and electronic offtrack problems can occur.

A mechanical offtrack problem within the HDA can be caused by several things. The stepper motor controlling the position of the heads can become inaccurate placing the heads slightly offtrack either way. The metal band which pulls the heads back and forth can become torn or damaged resulting in poor placement of the heads. The mechanical assembly holding the bearings for the movement of the heads can become distorted causing every track to be shifted one way. Or the HDA stepper motor could have a hysteresis problem. Any of these problems can only be corrected by replacing the HDA.

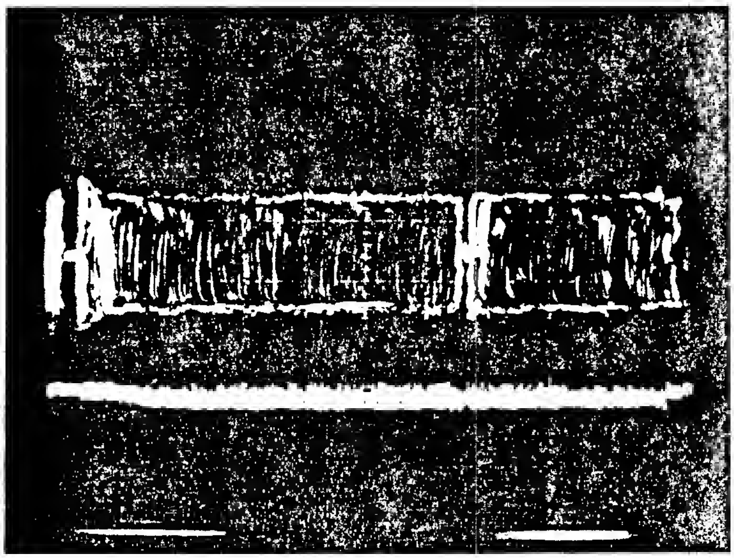
An electronic problem can resemble that of a mechanical one, except that there is generally no permanent damage done to the HDA. After reformatting, the HDA can be returned to normal service, as long as the problem has been eliminated from the system. If the system Z8 was an older revision piggyback type, then it is probably the bad component. This is because the Z8 has historically been the most common failed component in the Pro-File.

Another electronic failure that can cause an offtrack problem is the Controller PCB.

The upper photo shows three sectors which have been damaged by the system Z8 microprocessor by writing the data in an offtrack position. The lower photo shows a closeup of the analog signal where two sectors have actually been damaged. By telling the system to attempt to read the sector continuously, and carefully and gently moving the interrupter arm towards the target track, the signal became normal. This confirmed the fact that the sectors were written offtrack. By replacing the piggyback system Z8 with a masked ROM version, reformatting the HDA the problem disappeared. This was confirmed by running the Pro-File on FST for 48 hours.

# Diagnostic Procedure

Example of Bad Media



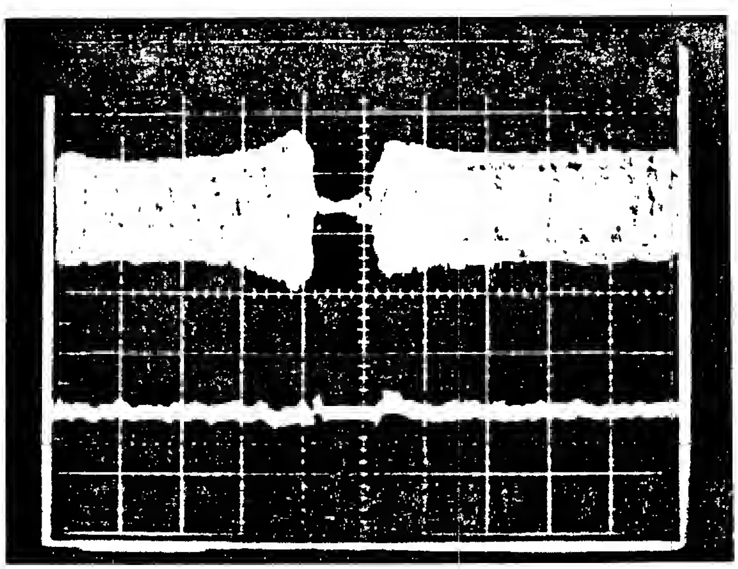
TP1

TP8

TP1 displays a closer view of a suspected bad area of a track. In about the middle of the sector there appears to be a section missing some magnetic material.

TP8 (VCO) does not show any particular abnormality.

Scope Settings:
TP1 - 1 volt/div
TP8 - .5 volt/div
Timebase: .1 msec/div



TP1

TP8

TP1 -displays a larger view of the sector shown above. On closer examination, the dead area appears as a sector mark, except much smaller in width.

TP8 (VCO) displays as flat signal, as it would between normal sector marks

Scope Settings:
TP1 - 1 volt/div
TP8 - .5 volt/div
Timebase: .01 msec/div

Suspect:
1. Media Problem

Example of Bad Media

Bad Media is an example of where the HDA disk surface coating has been damaged by either a defect in the magnetic coating or a scratch due to head contact with the media. There are a limited number of allowable defects per disk surface. These defects (hard errors) are defined as $\leq$ 2 bytes in length. The total number of defects is:

| | |
|---|---|
| Per Drive | 32 errors total |
| Per Surface | 8 errors total |
| Track 0 | No errors allowed |

The HDA disk drive uses two double sided 5-1/4 inch discs coated with an iron oxide base material as the recording media. The disc dimensions are 40mm inside diameter and 130 mm outside diameter. The thickness of the magnetic coating increases linearly from 20 microinches to 40 microinches at the outside diameter. The disk surface is coated with a Teflon lubricant 40 to 60 angstroms in thickness. (an angstrom = 0.0000000004 inches)

The media defect shown at left was detected by looking at the spares list of supposedly bad sectors, created by the Quick Debugger program and then telling the Big Debugger program to continuously read the suspect sector.

An initial view of the track looked completely normal, except for the fact that one of the sectors produced an error when reading.

By displaying the whole sector, there appeared to be a small area of no signal present (Refer to upper photo). Closer examination (by using the delay trigger function of the oscilloscope) of the suspect area of the sector, shows a total loss of signal in this area (lower photo).

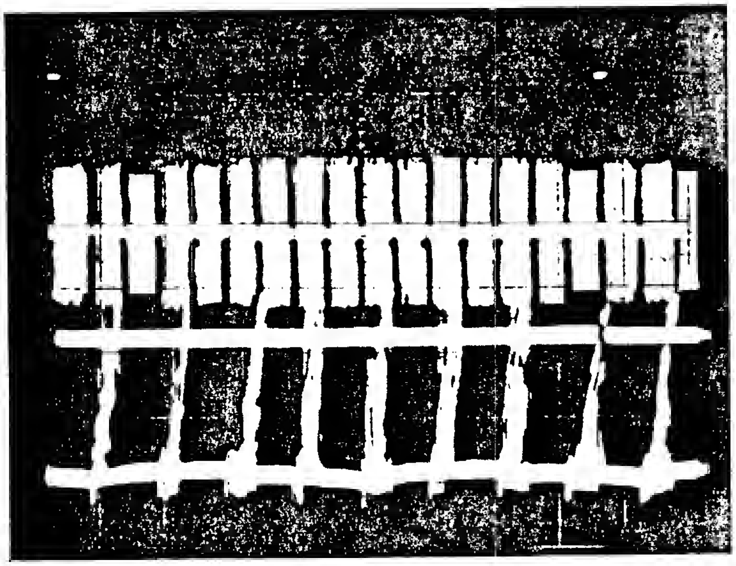
If bad media is suspected an attempt should be made to write data to the sector(s) in question before the conclusion can be made that the suspect area is actually a media problem.

The Big Debugger allows the technician to read a sector into the computer buffer and write the sector back out to the 'bad' sector on the Pro-File. (Refer to page 2.40, for instructions on the Big Debugger program. Use the command <W> to write.)

If the number of total errors incurred by reading the media is greater than or equal to the total number of errors shown above, then the HDA should be rejected as defective.

# Diagnostic Procedure

Example of Abnormal VCO Signal at TP8



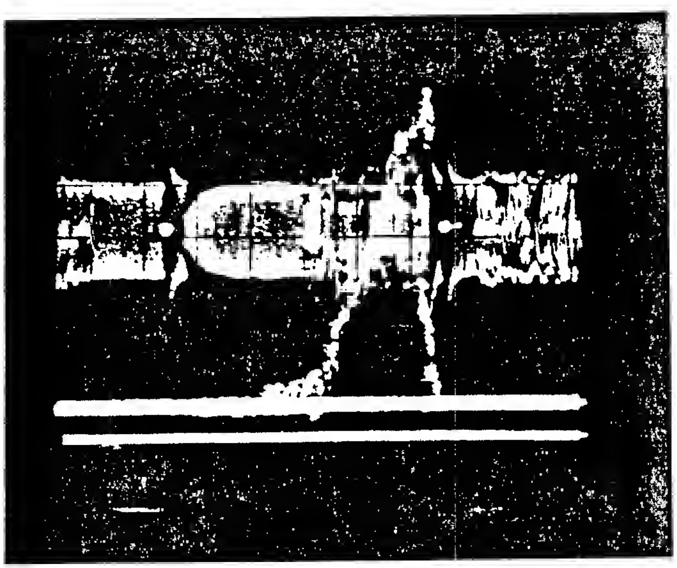
TP1

TP8

TP1 displays a view of a track of data. (The entire track appears between the two arrows)

TP8 (VCO) displays a very high amplitude signal (2v). This abnormal voltage is due to the errors occurring when reading.

Scope Settings:
TP1 - 1 volt/div
TP8 - .5 volt/div
Timebase: 2 msec/div



TP1

TP8

TP1 displays a closer view of one of the sectors of a track. This sector (and all others of the track) has been written offtrack.

TP8 (VCO) tries to correct for the offtrack condition by boosting its amplitude voltage. This effect is seen at the left.

Scope Settings:
TP1 - 1 volt/div
TP8 - .5 volt/div
Timebase: .2 msec/div

Suspect:
1. Analog PCB
2. HDA

Example of Abnormal VCO charge pump Signal

During a normal read operation, the Pro-File locks to the analog data signal by comparing the phase of the clock in the analog read signal with the phase of the VCO. If the VCO leads or lags the analog data clock a positive or negative correction voltage is stored in the charge pump capacitor. The charge on this capacitor is the voltage controlling the VCO, and can be seen at TP8 on the Analog PCB (usually ± 1 volt Peak to Peak).

To change the frequency, the Pro-File changes an input voltage to the VCO.

If the VCO charge pump signal (TP8) is observed along with the data signal (TP1) and a large deviation in VCO charge pump voltage appears (similar to the spikes in the upper photo), the VCO circuitry on the Analog PCB could be causing the abnormal VCO charge pump voltage to occur.

By changing the timebase to read a single sector (the lower photo), notice that both the analog data signal at TP1 and the VCO charge pump voltage at TP8 appear abnormal.

TP1 displays an offtrack condition (noted by the pinching of the signal following the sector mark), where the head is not positioned directly over the written data signal.

This offtrack condition can be either caused by an electronic or HDA related failure. (There are more examples of an offtrack data signal earlier in this procedure.)

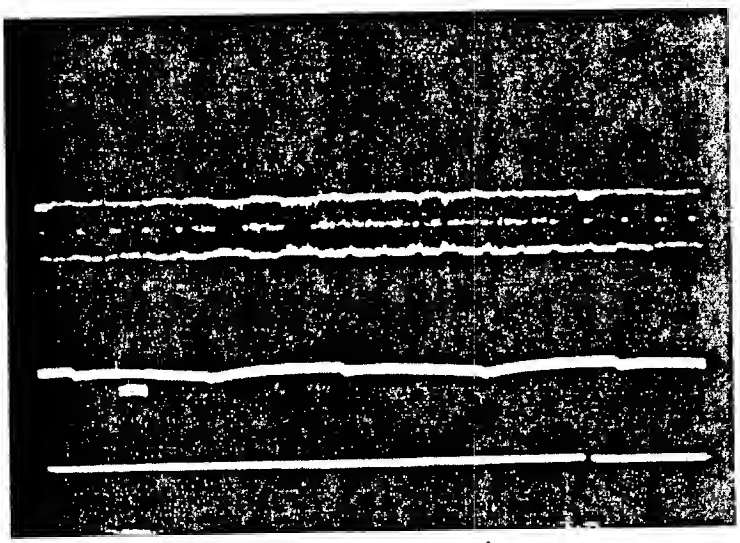
As it turned out, every track on the particular HDA which produced this picture showed an analog data signal similar to TP1 (in the lower photo).

Because every sector of every track on the HDA was offtrack, it might be concluded that the HDA is bad because of the consistency in head misalignment.

The problem could be remedied by reformatting, but this would not be a good thing to do as the reason why the Pro-File went offtrack is not known. (Unknown damage internal to the HDA itself)

# Diagnostic Procedure

Example of Abnormal AGC
(Automatic Gain Control)

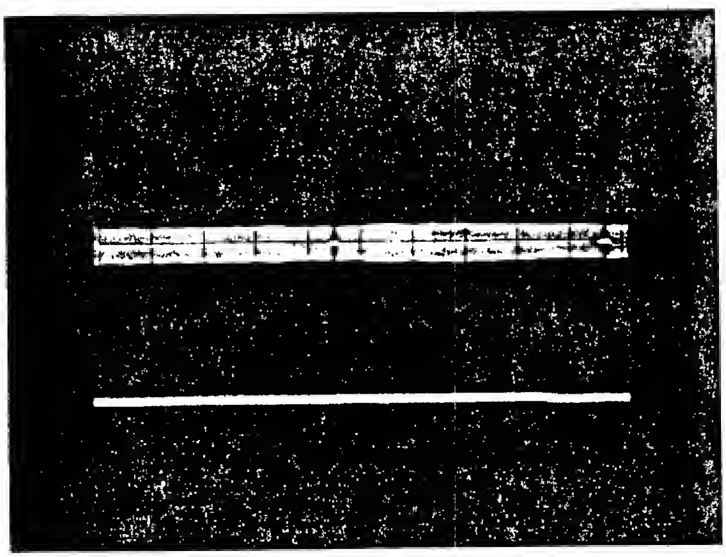


HORZ SWP = 2ms/DIV

TP1 displays a view of a track of data. The track amplitude is about half the expected value of 2 mv p-p.

TP8 (VCO) is not used here

Scope Settings:
TP1 - 1 volt/div
TP8 - .5 volt/div
Timebase: 2 msec/div



TP1 displays a closer view of some of the sectors of the track. Note that the sectors don't have the bell shape near the sector mark.

TP8 (VCO) is not used here.

Scope Settings:
TP1 - 1 volt/div
TP8 - .5 volt/div
Timebase: Variable

Suspect:
1. Analog Card
2. HDA

## Example of Abnormal AGC

A normal data signal read at Test Points 1 & 2 on the Analog PCB have an average amplitude voltage of about 2 volts peak to peak.

If there is a malfunction in the amplifier circuits between the disc heads and TP1 & 2, the signal amplitude can be much less. For example, the analog to digital conversion circuits may be able to operate with voltages as low as 1.1 volt Peak to Peak.

Below 1.1 volt the analog circuitry just does not get a large enough amplitude signal to function.

The AGC circuitry was added to overcome normal changes in signal as the head seeks back and forth between the inner and outer tracks.

Decreases in the thickness of media coating or head flying height tend to cancel a loss in signal. Inner tracks will usually have the lowest amplitude signals.

In the upper photo at the left, the AGC circuitry was not functioning correctly as the amplitude was about 1 volt peak to peak.

After power up, the interrupter began to scan normally until about track 100, when the scan stopped.

Several hours later the interrupter was still stopped on the same track, unable to read the data present there.

The lower photo shows an expanded view of one entire sector from another track. Note that the normal flared shape present immediately after the sector mark is missing.

This missing "bell" shape is a characteristic of a faulty AGC circuit on the Analog PCB.

The Analog PCB was replaced and the Pro-File functioned normally.

# SECTION 2

# SERVICE PROCEDURES

# SECTION 2 TABLE OF CONTENTS



## Pro-File Module Removal/Replacement Procedures



## PCB Upgrades



## Checks and Adjustments



## Software Operation Procedures

HOW TO USE THIS SECTION:

This section contains the removal/replacement, check and adjustment, and software operation procedures you will need to repair the Pro-File.

If you are unsure which procedure to perform, go to the troubleshooting procedure in the Troubleshooting Section and follow the directions.

# PROFILE MODULE REMOVAL AND REPLACEMENT PROCEDURES

## INTRODUCTION

The following equipment will be needed in these procedures:

| | |
|---|---|
| Diagonal cutters ("dikes") | Protective Pad |
| Tie Wraps | Medium Phillips Screwdriver |
| Small Flatblade Screwdriver | Needlenose pliers |

**CAUTION:** The ProFile is a mechanical device with motors and moving parts. Rough handling such as dropping the drive, sharply jarring it or allowing heavy objects to fall on it can cause a malfunction. Whenever it is necessary to turn the ProFile over, be sure to rest it on a protective pad.

UNDER NO CIRCUMSTANCES SHOULD THE HDA BE ENTERED!

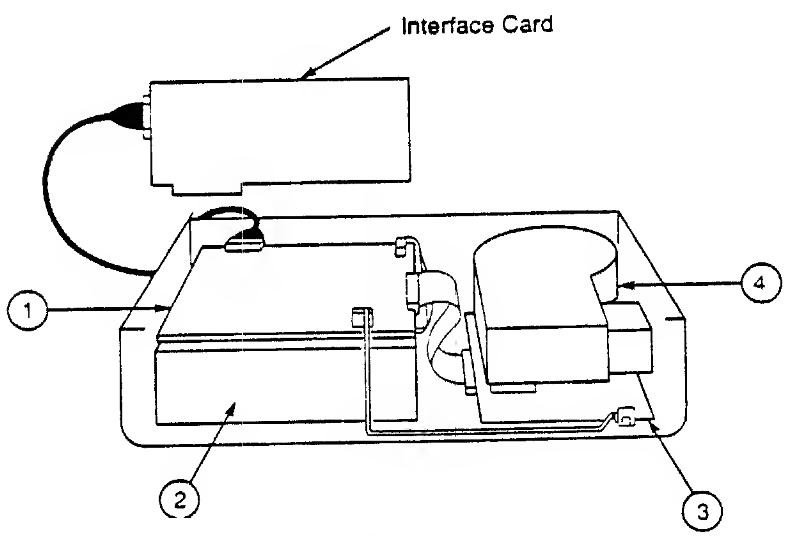



**FIGURE 1**

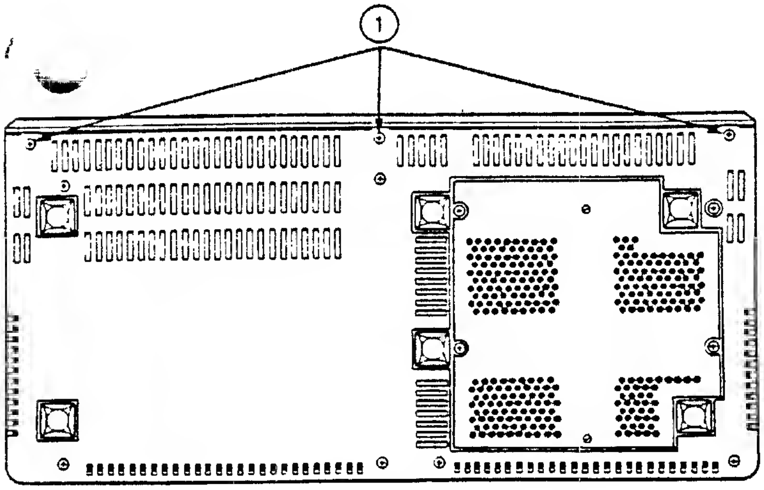



FIGURE 2

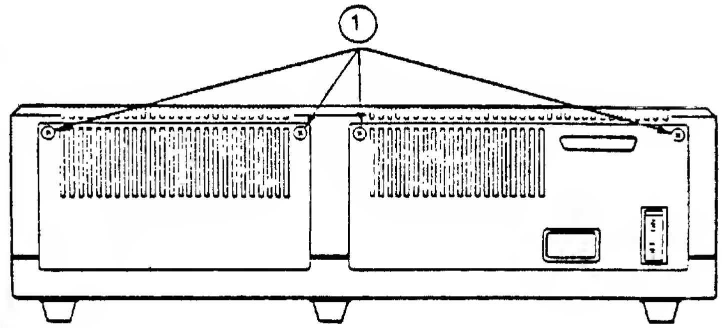



FIGURE 3

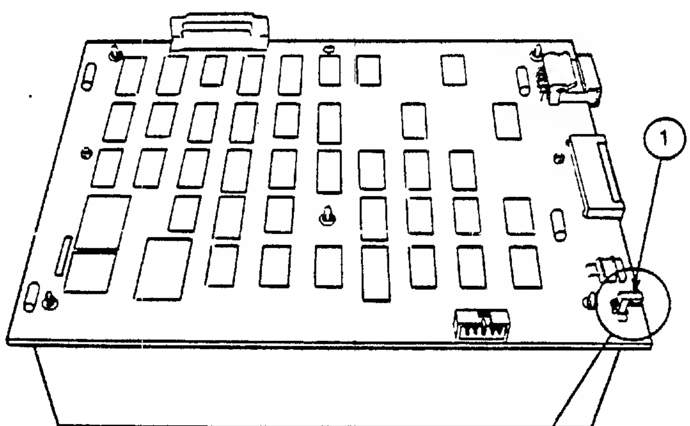



FIGURE 4

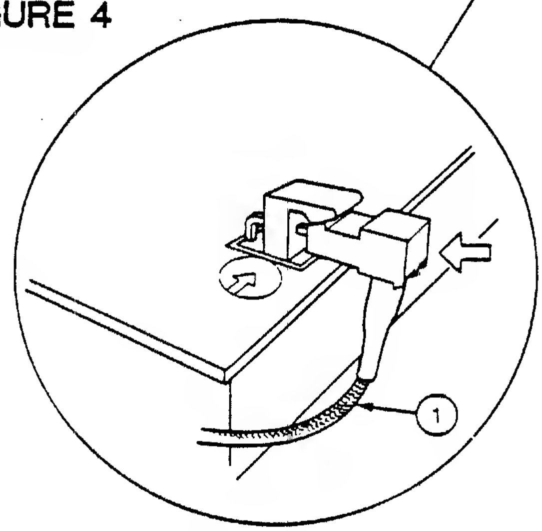



FIGURE 5

## A. THE PRO-FILE COVER

**Removing the Cover:**

1. Make sure the ProFile is turned off. Disconnect the power cord and interface cable (ribbon cable) from the back of the ProFile.

2. Turn the ProFile over, lay it on the protective pad, and remove the three Phillips-head screws from beneath the front panel (Figure 2, #1).

3. Turn the ProFile right side up; loosen but do not remove the four screws on the back of the unit (Figure 3, #1).

4. Carefully pull out the lip on the bottom of the cover to disconnect it from the frame.

5. Take care not to pull on the LED cable as you carefully lift the cover off and rest it on the far side of the case, .

6. Unplug the LED cable from its socket on the controller PCB (Figure 4, #1).

**Reinstalling the Cover:**

1. Attach the LED cable to its connector on the controller PCB (Figure 5). Make sure the LED cable exits down and away from the PCB (Figure 5, #1).

2. Replace the ProFile cover. (Hints: The four slots on the back of the cover fit between the inner and outer rear plates, over the four loosened screws. Line up the back first; then pull the cover gently forward and down. Check around the cover to make sure the LED cable isn't caught between the cover and the base; then tighten the four rear-plate screws.)

3. Turn the ProFile over and replace the three screws on the front edge (Fig. 2).

4. Turn the ProFile right side up. Reinstall the power cord and the interface cable.

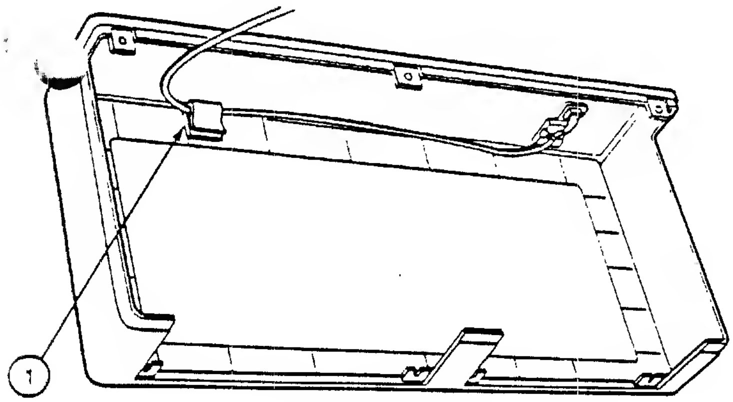



FIGURE 6

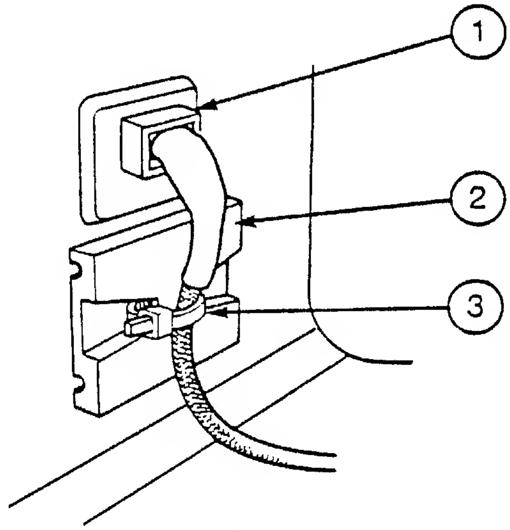



FIGURE 7

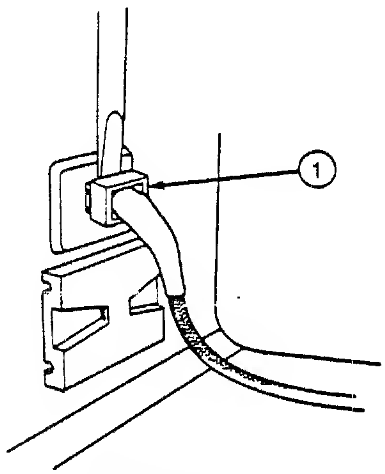



FIGURE 8

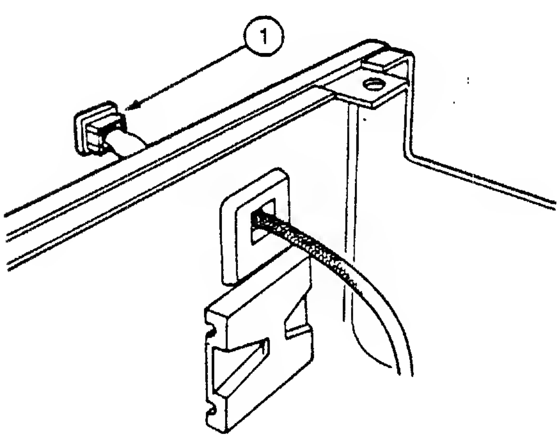



FIGURE 9

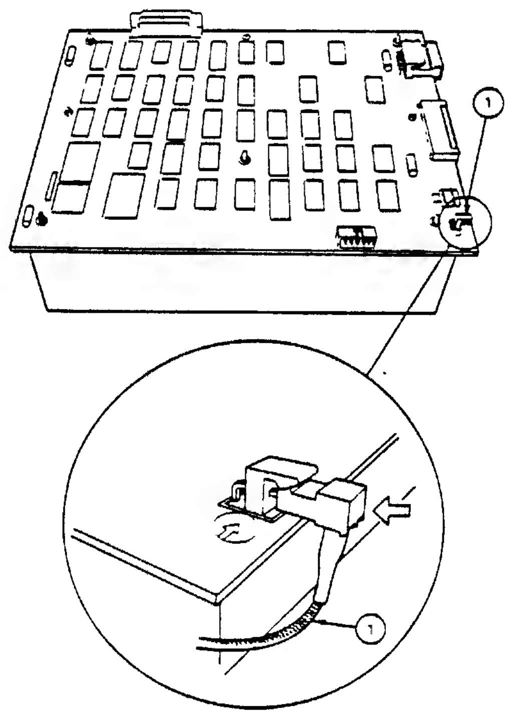



FIGURE 10

## B. THE READY L.E.D.

**Removing Ready LED:**

1. Remove the ProFile cover and disconnect the LED cable from the controller PCB. Lay the cover flat, as in Figure 6.

2. Cut off the white plastic tie (Figure 7, #3) that holds the LED cable to the white holder in the cover (Figure 7, #2).

3. Remove the other end of the LED cable from the other holder in the cover. (On some ProFiles, this holder will be a clamp like the one shown in Figure 6, #1; on others, it will be like the one shown in Figure 7.)

4. With a flathead screwdriver, pry the cable clamp off the back of the LED (Figure 8, #1) and slide it down the cable, out of the way.

5. Gently push a few inches of the cable out through the slot in the cover, as shown in Figure 9.

   NOTE: You may have to remove the "ready" label around the LED opening on the cover to free the LED.

6. Around the red LED is a small black plastic mount. Remove the mount (Figure 9, #1) by pushing out its side flaps and sliding it off the LED.

7. Pull the cable back through the hole in the case.

**Installing the Ready LED:**

8. Thread the LED cable through the opening in the cover, and place the small black plastic mount on the LED (see Figure 9, #1). Then pull the cable back through the opening until the LED fits in its slot. Replace the "ready" label.

9. Push the cable clamp (Figure 7, #1) up to the cover until it holds the cable steady.

10. Place the LED cable against the white plastic holder and fasten it with a tie wrap (Figure 7, #2 and 3).

11. Place the cable in the other holder (Figure 6, #1), using a tie wrap if necessary. Cut off excess tie wrap.

12. Connect the LED cable to the controller PCB (Fig. 10) and reinstall the cover.

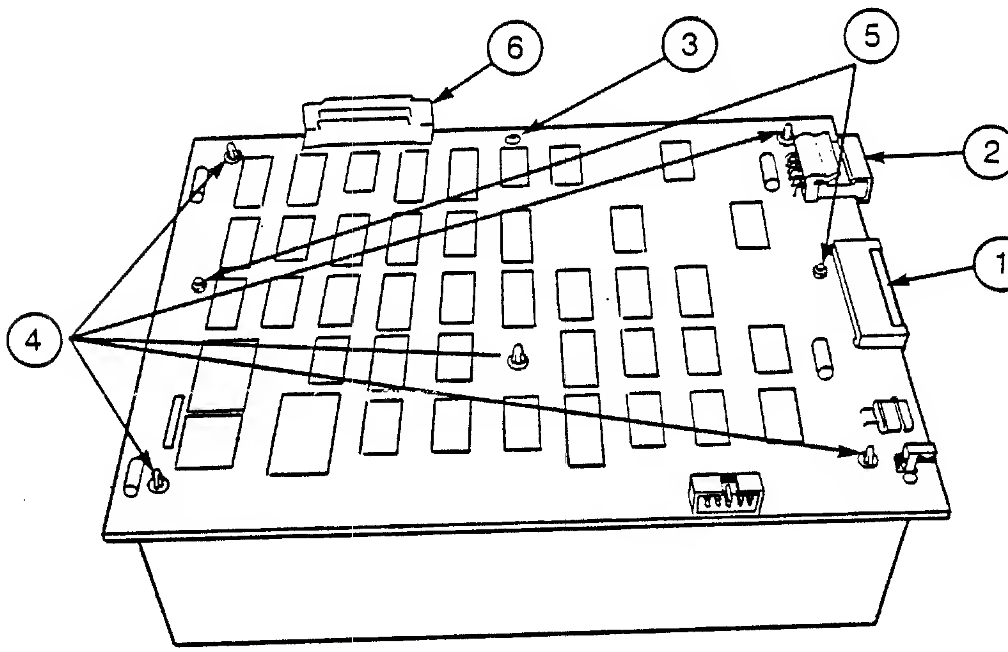



**FIGURE 11**

## C. THE CONTROLLER PCB

**Replacing the Old PCB:**

1. Remove the cover and disconnect the LED from the controller PCB.

2. Disconnect the ribbon cable (Figure 11, #1) and (as far as you can) the orange Mylar motor control cable (Figure 11, #2) from the controller PCB. (You can finish disconnecting the motor control cable more easily after taking the PCB out.) NOTE: Do not pull on the ribbon cable (analog-to-controller cable). Push and wiggle the grey plastic connector until it comes free of the PCB.

3. Remove the long screw at the middle rear of the controller PCB (Figure 11, #3).

4. Use the needlenose pliers to push in the flanges of each of the five plastic stand-offs (Figure 11, #4), to release the PCB. NOTE: Some PCBs will have two additional stand-offs, or two screws to remove, as shown in Figure 11, #5.

5. Lift the controller PCB forward and up off the power supply - you may have to push out on the rear plate to free the interface cable connector (Figure 11, #6), and finish disconnecting the motor control cable. Set the PCB aside. NOTE: When you lift off the controller PCB, you will see a loose metal spacer under the spot where you removed the long screw. Save this spacer for use with the new PCB.

**Installing the New PCB:**

6. Holding the controller PCB over the power supply, position the interface cable connector (Fig. 10, #6) in its slot in the rear plate.

7. Position the controller PCB over the five plastic stand-offs, but don't push it down yet.

8. Connect a) the orange Mylar motor control cable and
   b) the analog-to-controller ribbon cable.

9. Slide the metal spacer under the PCB so that it is underneath the rear, middle screw hole. Insert the long screw through the hole and the spacer without tightening it.

10. Gently push the PCB down until the stand-offs hold it firmly in place; then tighten the long screw.

11. Connect the LED cable and replace the cover.

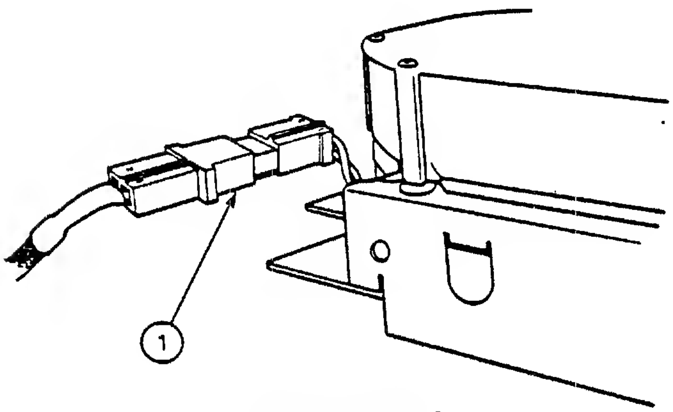


FIGURE 12

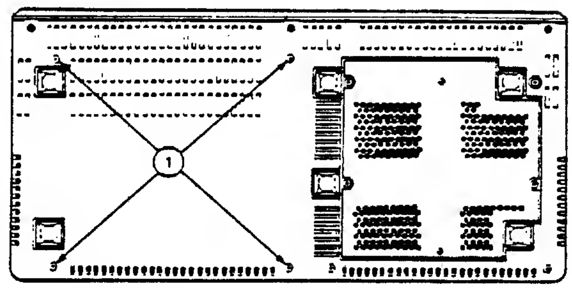


FIGURE 13

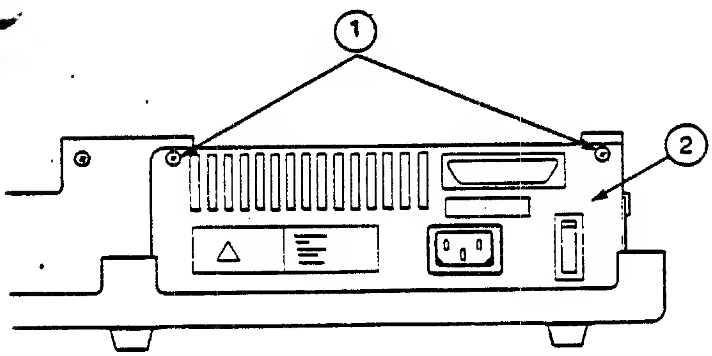


FIGURE 14

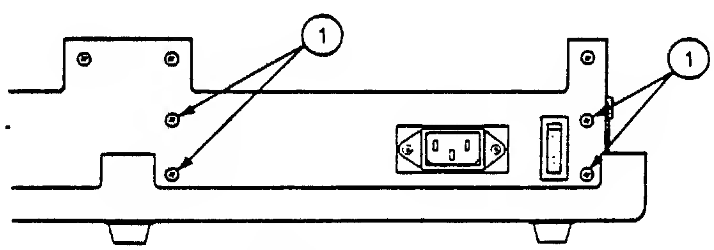


FIGURE 15

**D. THE POWER SUPPLY**
**Removing the Old Power Supply**

1. Remove the cover, disconnect the LED cable and remove the controller PCB.

2. Disconnect the small white power supply plug (between the power supply and the HDA) from its mate (Figure 12, #1).

3. Turn the ProFile over and rest it on a foam pad. Remove the four screws that hold the power supply onto the bottom of the ProFile case (Figure 13, #1).

4. Hold the power supply in place as you turn the ProFile right side up. Position it with its rear plates facing you. Find the longer of the two rear plates, remove the two screws that hold it on (Figure 14, #1), and remove the plate (Figure 14, #2).

5. Remove the four screws that hold the power supply to the inner rear plate (Figure 15, #1), and lift out the power supply.

**Installing the New Power Supply**

1. Position the power supply unit in the ProFile frame so that the two cables come out toward the HDA. Line up the four screw holes in the back of the power supply with the four lower holes in the inner rear plate; install the four screws.

2. Replace the outer rear plate. Insert the two mounting screws that hold this plate to the inner rear plate, but don't tighten them all the way.

3. Connect the two-pronged power supply cable to its mate from the HDA (Figure 12, #1); reconnect them **behind** the orange Mylar cable (i.e., closer to the HDA).

4. Holding the power supply in place, turn the ProFile over onto the workpad. Replace the four screws that hold the power supply to the bottom of the case. Turn the ProFile right side up.

5. Reinstall the controller PCB.

6. Connect the LED cable to the controller PCB and put the ProFile cover back on.

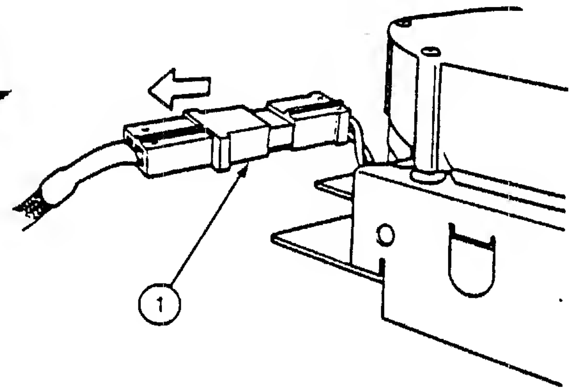



FIGURE 16

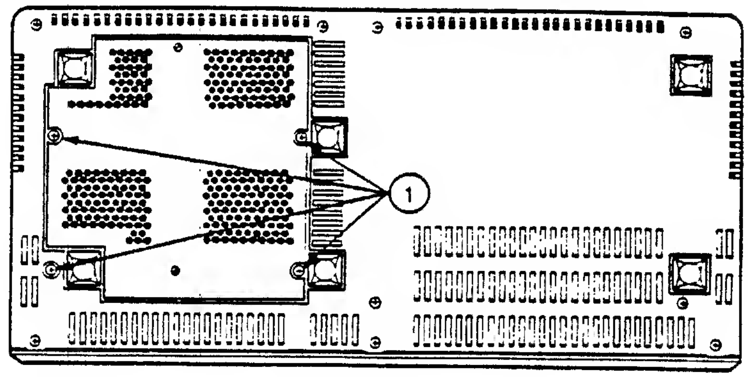



FIGURE 17

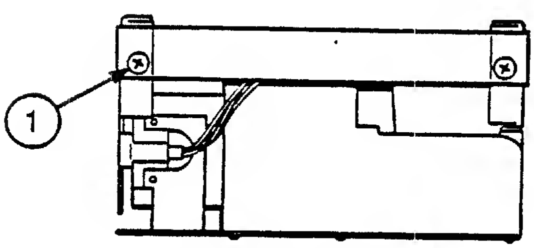



FIGURE 18

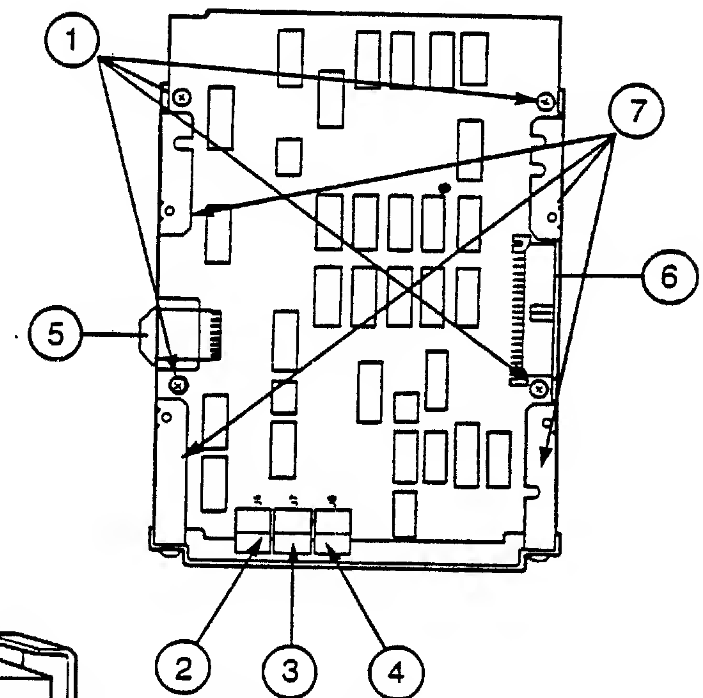



FIGURE 19

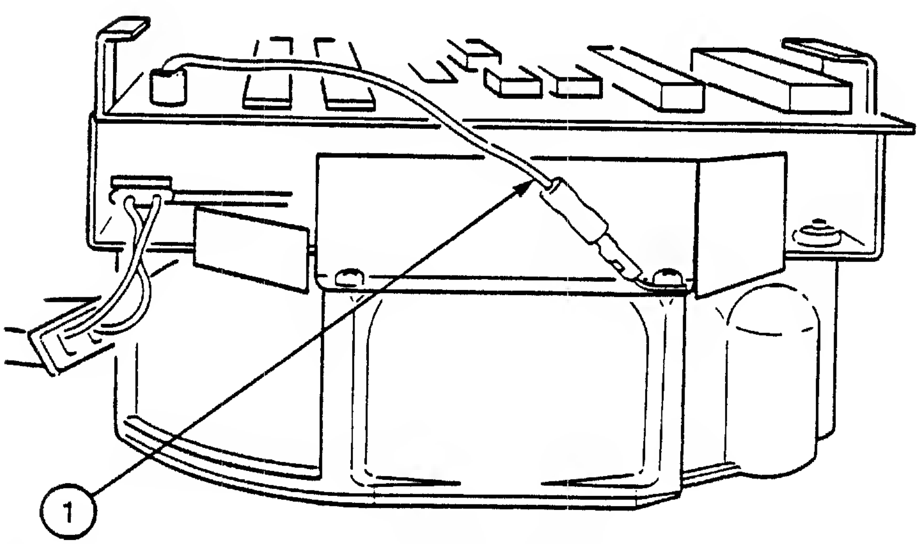



FIGURE 20

## E. THE HARD DISK ASSEMBLY (HDA), AND ANALOG PCB

**Removing the Old HDA and Analog PCB:**

1. Remove the cover, disconnect the LED cable, and disconnect the cables that connect the HDA to the power supply and controller PCB.

2. Turn the ProFile over and rest it on the protective pad. Remove the four screws that mount the HDA to the ProFile housing (Figure 15, #1).

3. Carefully lift the housing up and off. Keep the HDA on the protective pad.

**Removing Old the Analog PCB:**

1. Turn the HDA so that the ribbon cable comes out to your right.

2. If there is a metal bar across the front of the analog PCB as shown in Figure 16, #1, or over the top of the analog PCB, remove the screws that hold the bar in place and set the bar aside. NOTE: This bar does not exist on later models.

3. Three small cables (Figure 17, #2, 3, 4) connect to one side of the PCB. The plug and socket of each cable should bear a corresponding number, so that you can tell which plug goes in which socket. If such numbers are not present, write them in with a marker.

4. Carefully disconnect all five cables from the analog PCB:
   1. Index cable (Figure 17, #2)
   2. Stepper motor cable (Figure 17, #3)
   3. Track 0 cable (Figure 17, #4)
   4. Head cable (Figure 17, #5)
   5. Analog-to-controller cable (Figure 17, #6)

5. Turn the HDA so that the rounded side is facing you, and remove the ground strap (Figure 18, #1) by grasping its plug firmly with the needlenose pliers and pulling.

   **CAUTION:** This is a short wire and its connection is tight. Use minimum force to prevent ripping it off the analog PCB.

6. Remove the four Phillips-head mounting screws from the analog PCB (Figure 17, #1).

7. Gently squeeze outward on the rails (Figure 17, #7) and lift the analog PCB from the HDA.

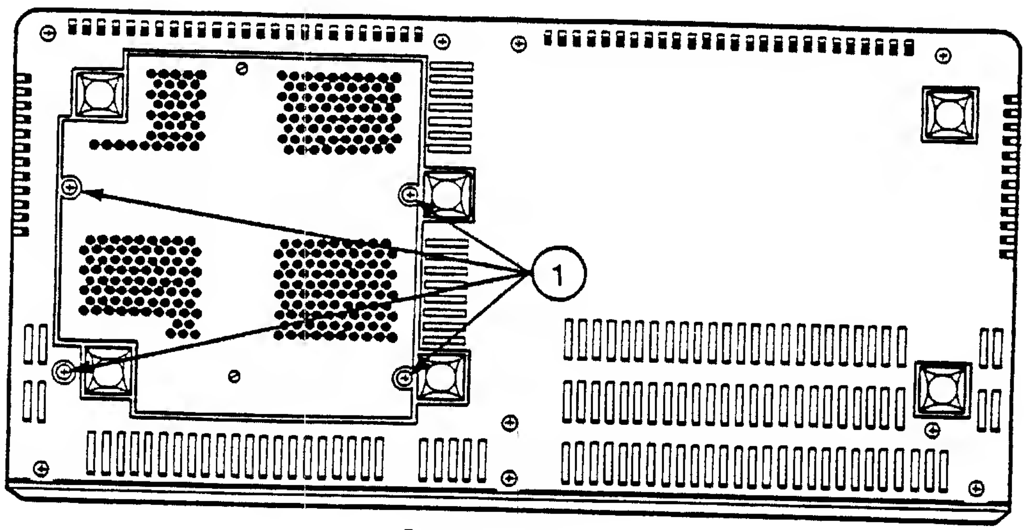



**FIGURE 21**

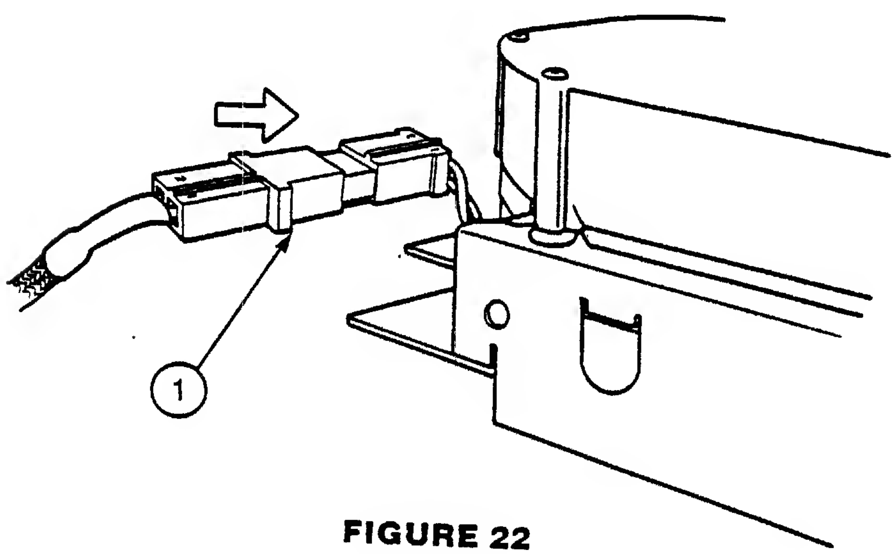



**FIGURE 22**

**Installing the New Analog PCB:**

8. Slide the analog PCB back under the rails. Line up the holes in the PCB with the screw holes on the rail.

9. Reconnect the analog-to-controller (ribbon) cable. (Do not use the arrow on the ribbon cable connector as a guide to connecting it. The ribbon cable should exit down and away from the analog PCB, and the side of the connector where the ribbon cable curls over a bar should be on top.)

10. Reconnect the other four cables. Check to make sure they are connected to the right plugs.

11. Replace the four Phillips-head mounting screws in the analog PCB.

12. Reconnect the ground strap.

13. If there was a metal bar over the rail, replace it and reinstall its screws.

14. Reinstall the HDA, reconnect all cables, and replace the cover.

**Reinstalling the HDA:**

1. Turn the HDA so that the ribbon cable comes out to your right.

2. Place the ProFile case over the analog PCB (see Figure 19: the rear plates of the case should be on the far side of the HDA). Line up the screw holes in the case with the screw holes in the railings over the analog PCB (Figure 19, #1).

3. Reinstall the screws.

4. Turn the ProFile right-side up, with the rear plate facing you. (The ribbon cable should now extend out from the bottom of the HDA.)

J2 ON THE OLD MOTOR
CONTROL PCB, LEADS
TO THE BRAKE

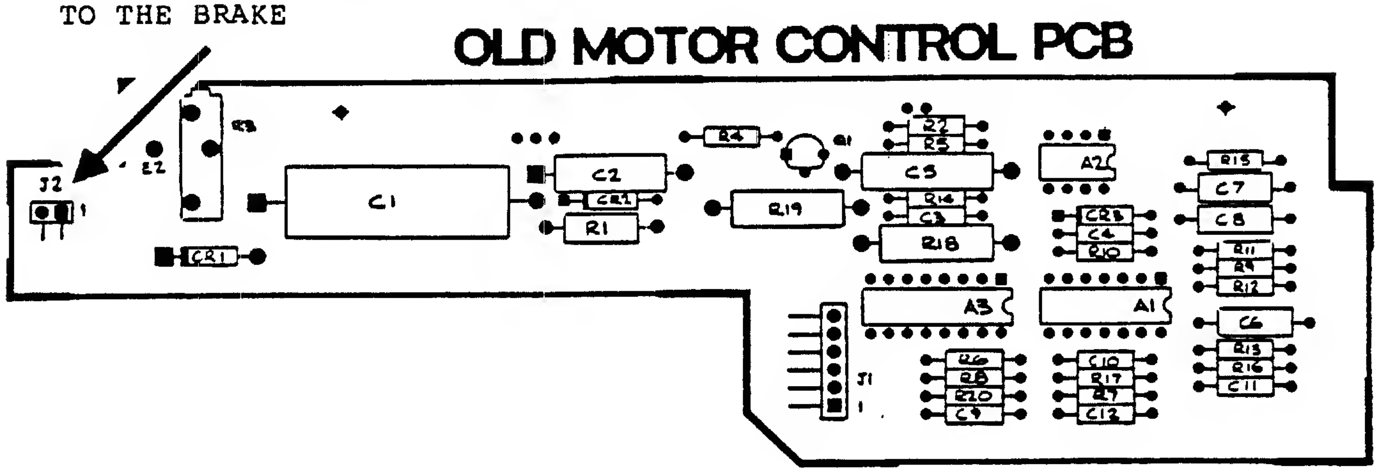
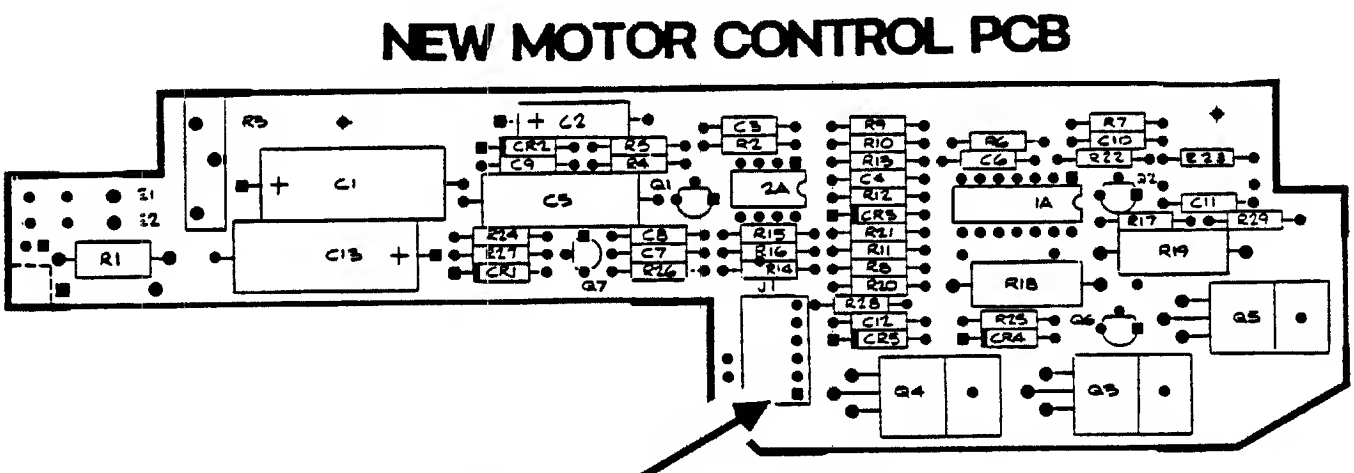



FIGURE 1




ON THE NEW MOTOR
CONTROL PCB,
PIN 1 ON THE MOLEX
PLUG IS AN EXTRA PIN

FIGURE 2

## F. THE MOTOR CONTROL PCB

1. Remove the HDA and the Analog PCB as described in the HDA and Analog PCB Removal/Replacement procedure found in this section.

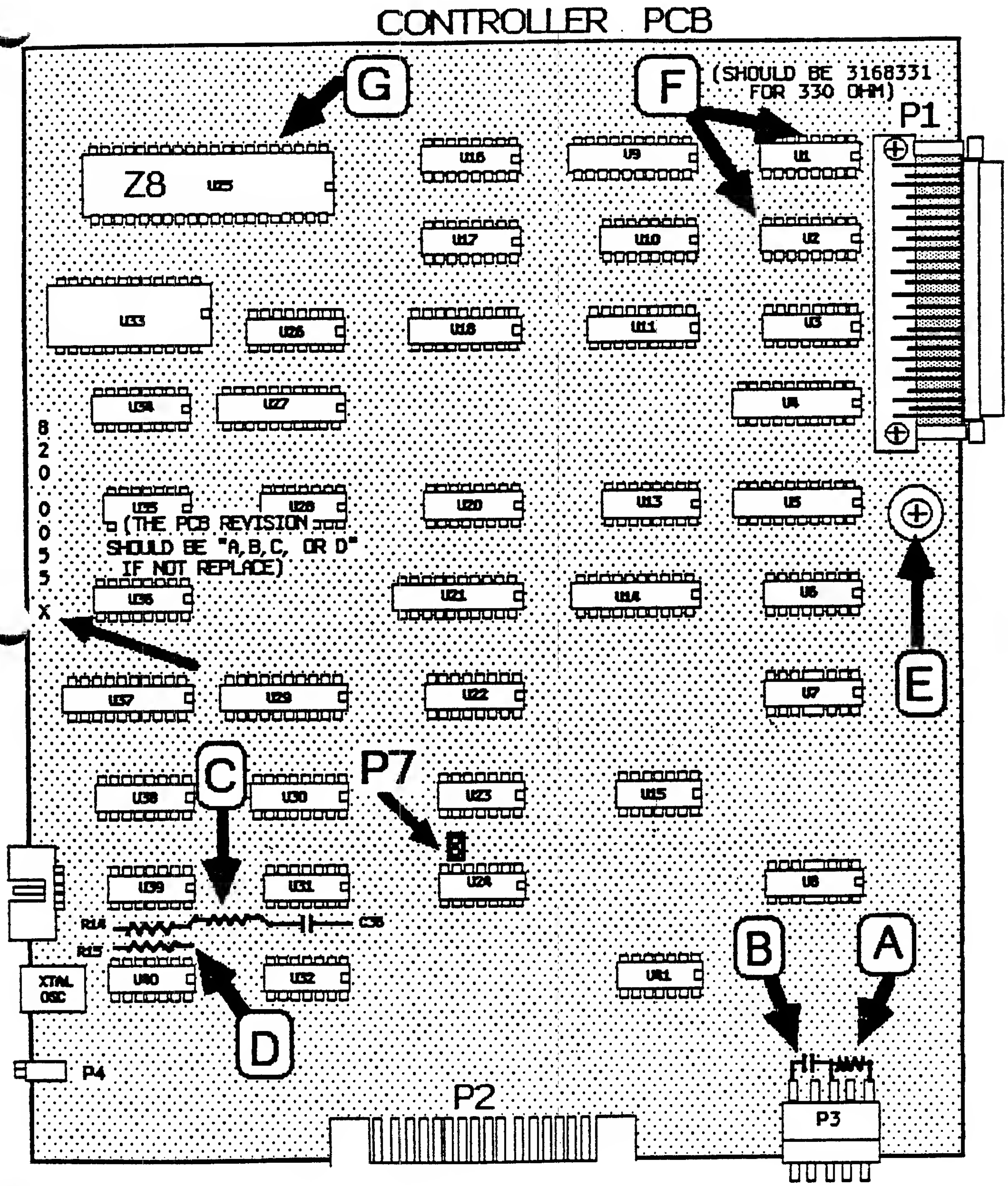
2. Refer to the illustrations on the opposite page to identify whether you have an old or new Motor control PCB. Your replacement motor control PCB should always be a new revision.

   *** If you have an old motor control PCB, then you must remove the brake on the HDA in addition to removing the motor control PCB.

   *** If you have a new motor control PCB then P1 may be a 7 pin Molex plug fitting on J1 a 6 pin jack. In this case pin 1 on the plug will be the extra pin with pins 2 through 7 of the plug fitting onto pins 1 through 6 of the jack.

3. Remove the motor control PCB by disconnecting all plugs, and removing the 2 screws fastening it to the HDA main assembly.

4. Reinstall the motor control PCB by reconnecting the plugs, and reinstalling the 2 screws to fasten the PCB to the HDA main assembly.


CONTROLLER PCB
(SHOULD BE 3168331 FOR 330 OHM)
G
F
P1
Z8
U25
U16
U9
U1
U17
U10
U2
U33
U26
U18
U11
U3
U34
U27
U4
8
2
0
0
0
5
5
X
U35
U28
(THE PCB REVISION SHOULD BE "A,B,C, OR D" IF NOT REPLACE)
U20
U13
U5
U36
U21
U14
U6
E
U37
U29
U22
U7
C
P7
U38
U30
U23
U15
U39
U31
U24
U8
R14
R15
C36
B
A
XTAL OSC
U40
U32
U41
D
P4
P2
P3

## CONTROLLER BOARD UPGRADE PROCEDURE

The following equipment may be needed for this procedure:

| PART | APPLE PART NUMBER |
|---|---|
| 5.1K ohm Resistor (1) | 101-4512 |
| 0.1 microfarad Capacitors (2) | 130-0007 |
| 1K ohm Resistor ±5% (1) | 101-4102 |
| 6.36 X 5/16 Standoff (1) | 860-0213 |
| Masked Z8 Microprocessor (1) | 341-0171-A |
| 330 ohm DIP Packs (2) | 112-0105 |

Identify the Rev level etched on both sides of the PCB. Refer to the illustration on the opposite page for the location of the items mentioned in the following discussion. If the Rev is 820-0055 Rev A, B, C, or D then perform the following checks and upgrades.

(There are a few controller PCBs in the field that do not have the 820-0055 number etched on the PCB. These PCBs should be replaced with an 820-0055 rev PCB.)

A. Solder a 5.1K ohm resister (PN 101-4512) between pins 1 and 3 of connector P3 on the controller bd.

B. Solder a 0.1 uf capacitor (PN 130-0007) between pins 3 and 5 of connector P3 on the controller.

C. Solder a 0.1 uf capacitor (PN 130-0007) between the upper lead of R14 (U40 pin 2) and the bottom lead of C36 (ground).

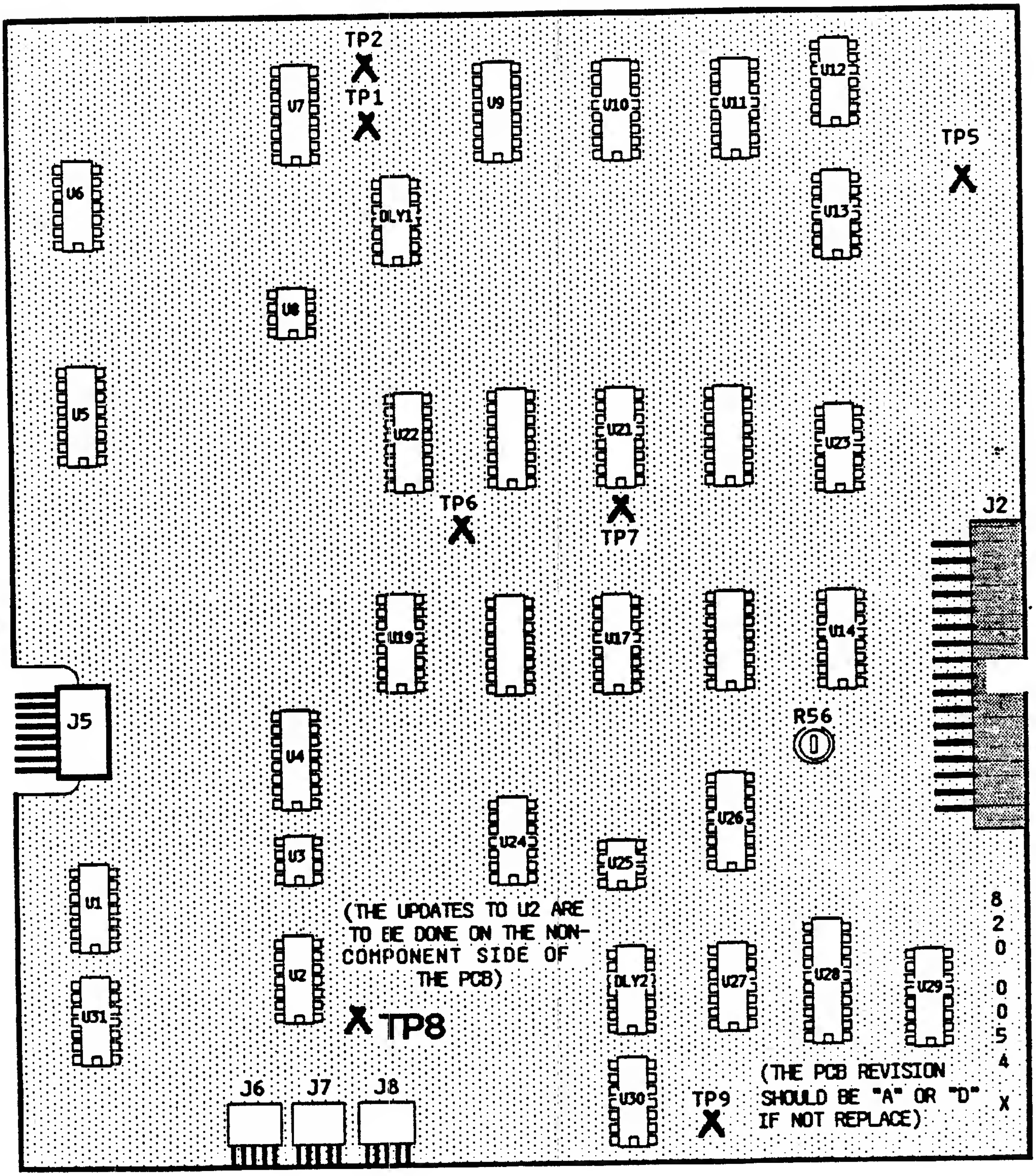
D. Check that R15 is present on the PCB. If R15 is missing or one lead is cut then replace it with a 1K ohm 5% resister (PN 101-4102).

E. Check that the metal standoff between the controller PCB and the power supply assembly is 5/16" in length. If it is not, replace it with a 6-36 X 5/16" standoff (PN 860-0213).

F. Check that U1 and U2 on the controller PCB are between 330 and 332 ohm DIP packages. If they are any other value, then replace them with 330 ohm DIP packages. (You may wish to verify the resistance of the current DIP packages with an ohm meter.)

G. Check the Z8. If it is the piggyback version then replace it with the latest mask version (no piggyback) (PN 341-0171-A).

# ANALOG PCB


TP2
TP1
U7
U9
U10
U11
U12
TP5
U6
DLY1
U13
U8
U5
U22
U21
U23
TP6
TP7
J2
U19
U17
U14
J5
R56
U4
U26
U3
U24
U25
U1
(THE UPDATES TO U2 ARE TO BE DONE ON THE NON-COMPONENT SIDE OF THE PCB)
820 0054 X
U2
DLY2
U27
U28
U29
U31
TP8
J6
J7
J8
U30
TP9
(THE PCB REVISION SHOULD BE "A" OR "D" IF NOT REPLACE)

## ANALOG BOARD UPGRADE PROCEDURE

The following equipment may be needed to perform this procedure:

| PART | APPLE P/N |
|---|---|
| 20mm section of 26 to 30 gauge insulated wire | N/A |
| 12mm section of 26 to 30 gauge insulated wire | N/A |
| 3.9K ohm Resistors (2) | 101-4392 |

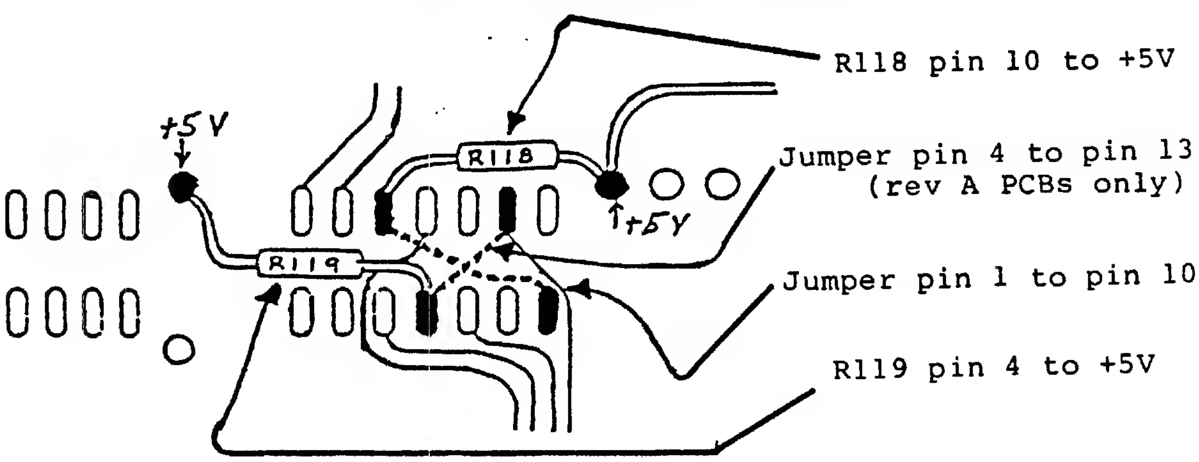
1. Identify the rev level of the PCB. The PCB part number is etched at the bottom left on both sides of the PCB. The number will be either 820-0054-A (rev A) or 820-0054-D (rev D). (No rev "B" or rev "C" PCBs were ever made for production) There are a few older analog PCBs in the field that do not have the 820-0054 number and alphabetic (i.e A, or D) identifier etched on the PCB. These should be replaced with rev "A" or "D" PCBs.

2. Locate device U2 and turn the PCB over.

3. If the PCB is rev "D", this will be the final step (skip step 4). If the PCB is rev "A" perform both this step and step 4.
   A. Solder an insulated wire approximately 3/4 (15mm) long from pin 1 of U2 to pin 10 of U2.
   B. Solder a 3.9K ohm resistor (Apple PN 101-4392) between pin 10 of U2 and +5V. This will be designated R118 on updated schematics.
   C. Solder a second 3.9K ohm resistor from pin 4 of U2 to +5V. Ths will be designated R119 on updated schematics.

4. Solder an insulated wire approximately 1/2" (9.5mm) long from pin 4 of U2 to pin 13 of U2.

**Underside of Analog PCB Location U2**



SIDE VIEW OF THE HDA, WITH THE ANALOG PCB ON THE BOTTOM

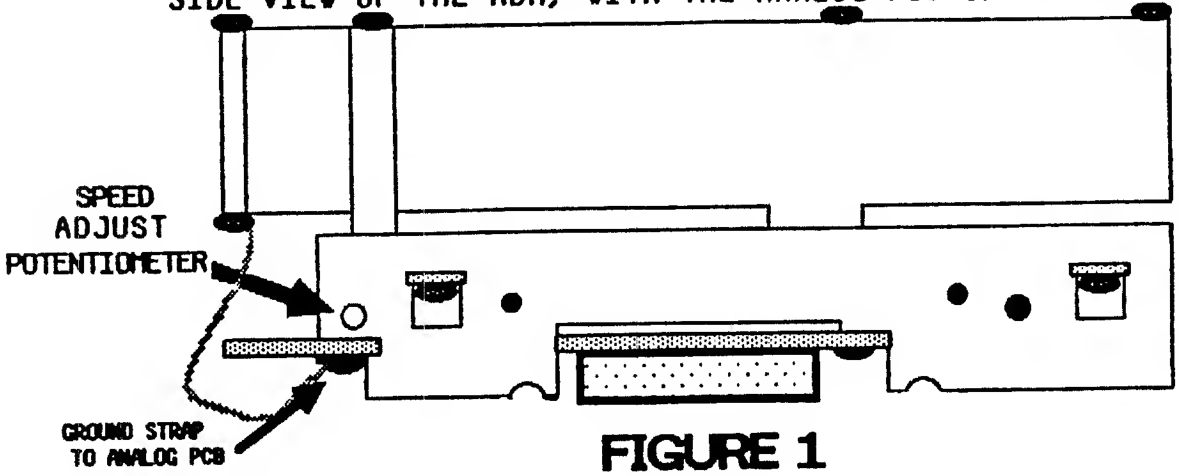



FIGURE 1

ANALOG PCB

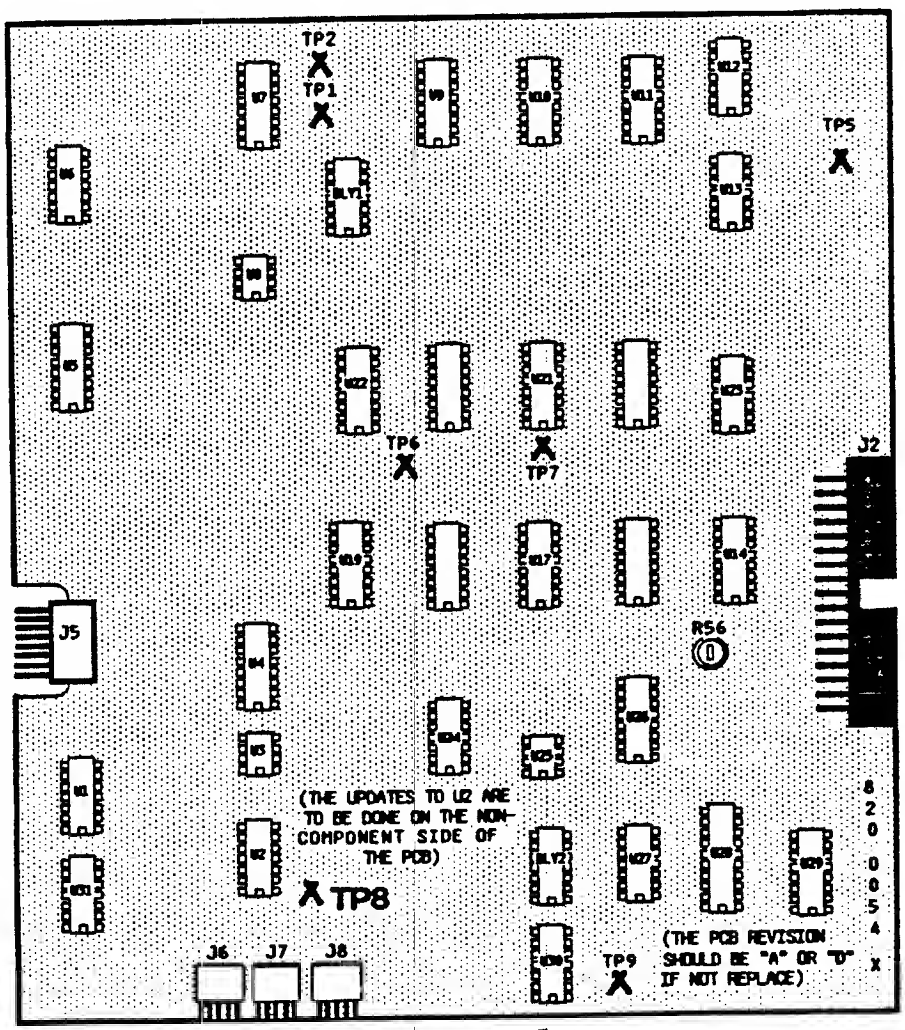



FIGURE 2

# HDA SPEED CHECK AND ADJUSTMENT PROCEDURE

The following equipment will be needed to perform this procedure:

| |
|---|
| Frequency Counter and probes<br>Anti-sabotage Sealant (e.g. glyptol)<br>Tweaker (1) for adjusting potentiometers |

Note: If you need instructions for any removal/replacement, you can find them in the Module Removal/Replacement Procedures part of this section.

**To CHECK:**

(1) Remove the cover from the Profile.

(2) Connect the black lead from the frequency counter to a ground point on the analog PCB. Connect the red lead to TP-1 on the Controller PCB.

(3) Set the frequency counter to read Per. A @ 10 hz.

(4) Turn on the Profile and allow 30 seconds for the HDA motor to get up to speed. The frequency counter should be showing the motor speed to be within 1% of 16667 ms. (16500 to 16832 ms.) If the motor speed is not within this range then perform the adjustment procedure below. If the motor speed is within the proper range reinstall the HDA assembly and cover on the Profile.

**To ADJUST:**

(1) Remove the HDA assembly from the Profile. Once removed, reconnect the ribbon cable from the HDA to P2 on the Controller PCB, and power connector P4 from the Power Supply to the HDA.

(2) Locate the trimmer potentiometer positioned near the ground strap on the Analog PCB by P4.

(3) Adjust the trimmer potentiometer until the HDA motor speed is within range (after each turn of the potentiometer allow time for the motor speed to settle).

(4) Once the motor is within the specified limits, lock the adjusting screw on the trimmer pot with anti-sabotage sealant.

(5) Reinstall the HDA assembly and cover.

## INDEX CHECK AND ADJUSTMENT PROCEDURE

The following equipment will be needed to perform this procedure:

| |
|---|
| 5/64 Allen (hex) driver |
| .030 inch flat gauge |

Note: If you need instructions for any removal/replacement, you can find them in the Module Removal/Replacement Procedures part of this section.

**To CHECK:**

(1) Remove the Cover, and then the HDA assembly, from the Profile.

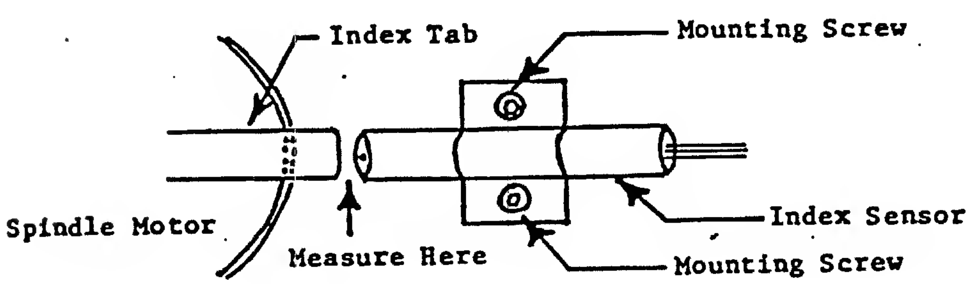
(2) Remove the Analog PCB from the HDA.

(3) Turn the HDA upside down in front of you. Locate the index mechanism as shown in figure 1 below.

(4) Rotate the spindle motor until the silver index tab on the spindle motor is aligned with the index sensor.

(5) Slide the gauge into the gap between the silver index tab on the spindle motor and the index sensor. If the gap is too small for the gauge, or the gauge is not snugly held in the gap, perform the adjustment below. If the gap is OK, reinstall the Analog PCB on the HDA assembly and the HDA assembly in the Profile. Then reinstall the Cover.

**INDEX MECHANISM**




**(Fig. 1)**

(This procedure is continued on the next page.)

## INDEX CHECK AND ADJUSTMENT PROCEDURE (continued)

**To ADJUST:**

(1) Loosen the two mounting screws so that the index sensor moves freely.

(2) Align the silver index tab and the index sensor.

(3) Place the 30 mil. flat gauge between the index tab and the index sensor.

(4) Push the index sensor forward (towards spindle motor) until it makes light contact with flat gauge.

(5) Tighten the mounting screws.

(6) The flat gauge should be held firmly but should not be so snug that it cannot be easily removed.

(7) Remove the flat gauge and check the operation of the index sensor.

(8) Reinstall the Analog PCB into the HDA assembly, and the HDA assembly into the Profile.

## BRAKE CHECK AND ADJUSTMENT PROCEDURE

The following equipment will be needed to perform this procedure:

| |
|---|
| 5/64 Allen (hex) driver |
| .010 inch flat gauge |
| Locktite thread sealer |

There are 2 main revisions of motor control PCBs for the Pro-File HDA. The older rev uses a brake to slow the HDA disk motor after power is removed. It is for this rev of motor contol PCB that this procedure was developed. The newer rev reverse biases the disk motor to slow the disk after power is removed. You can identify which PCB you have by referring to the illustration on page 2.16.

Note: If you need instructions for any removal/replacement, you can find them in the Module Removal/Replacement Procedures part of this section.

**To CHECK:**

(1) Remove the Cover and then the HDA assembly from the Profile.

(2) Remove the Analog PCB from the HDA.

(3) Turn the HDA upside down in front of you. Locate the brake mechanism as shown in figure 1. Insert the flat gauge between the Solenoid Body and the Plunger Plate as shown in figure 1.

The gauge should fit snugly but slide easily.

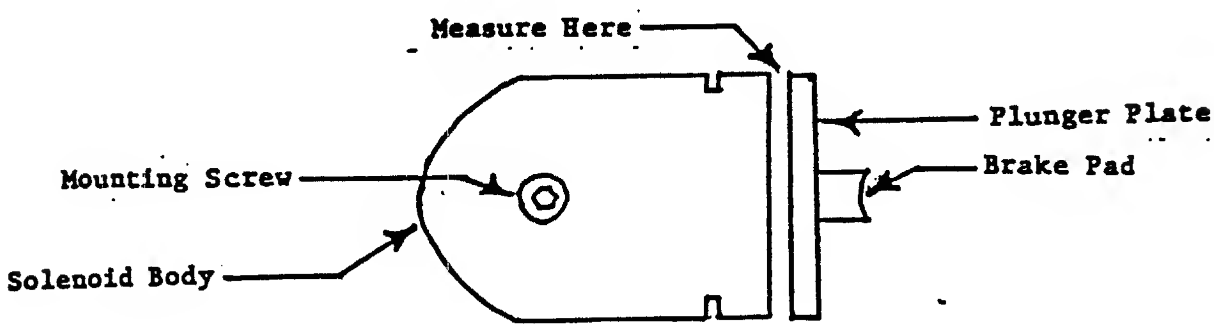
If the clearance is too tight or too loose, perform the procedure below.

If the clearance is OK reinstall the HDA assembly, and then reinstall the Cover.

(The adjustment procedure is continued on the next page.)

## BRAKE CHECK AND ADJUSTMENT PROCEDURE (continued)

### BRAKE MECHANISM




(Fig.1)

**To ADJUST:**

(1) Remove the mounting screw and coat the end threads with locktite.

(2) Carefully replace the mounting screw; avoid getting any locktite on the sides of the screw hole in the solenoid body.

(3) Run in the mounting screw until snug, then back out 1/4 turn.

(4) Place the flat gauge between solenoid body and plunger plate.

(5) Push the solenoid body forward (toward spindle motor) until the brake pad makes light contact with the braking surface of spindle motor.

(Hint: an Allen driver or similar object placed through the screw hole in the side bracket behind the solenoid body provides a convenient method of positioning the solenoid).

(The adjustment procedure is continued on the next page.)

(6) Tighten the mounting screw.

(7) The flat gauge should be held firmly by the solenoid but should not be so snug that it can not be removed easily.

(8) Remove flat gauge and check operation of the brake by performing the following steps:

a. Carefully position the HDA on a level surface, with the brake on top.

b. Reconnect P4 (no other HDA connections are necessary) from the HDA to the Power Supply.

c. Plug the Power cord into the Profile and turn it on.

**Observe:** That when the spindle motor begins to spin, the brake solenoid energizes and pulls the brake pad away from the braking surface of the spindle motor.

d. Turn the Profile off.

**Observe:** That the brake solenoid deenergizes and the brake pad is released to contact the braking surface of the spindle motor.

**WARNING: Disconnect Power from the Profile before going any further.**

(9) If the brake "chatters", a possible remedy is canting or tilting the solenoid body left or right.

(10) Reinstall the Analog PCB on the HDA assembly, and the HDA assembly in the Profile.

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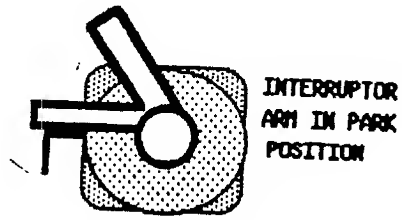



FIGURE 1

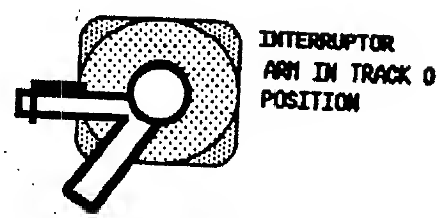



FIGURE 2

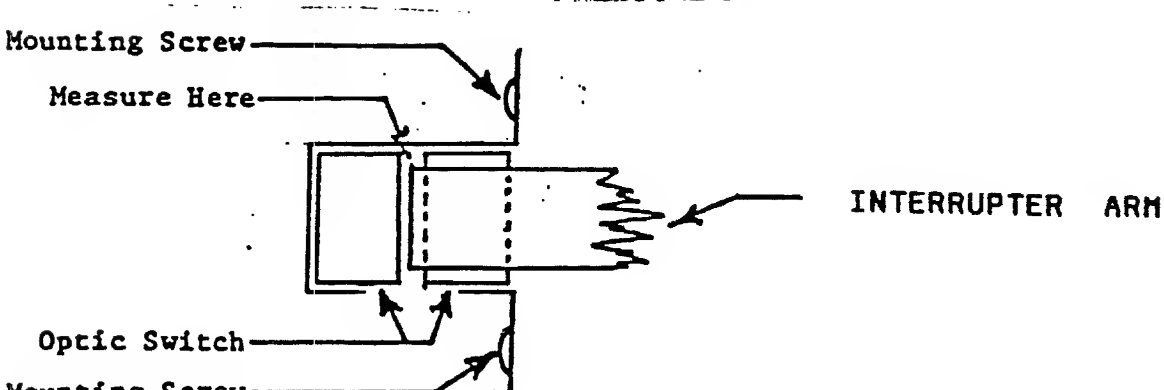



FIGURE 3

## TRACK 0 CHECK AND ADJUSTMENT PROCEDURE

The following equipment will be needed to perform this procedure:

| |
|---|
| Profile Debug Z8 |
| .010 inch wire gauge |
| .070 inch wire gauge |
| A/// with internal disk drive |
| .050 inch Allen (hex) driver |

Note: If you need instructions for any removal/replacement you can find them in the Module Removal Replacement Procedures in this section.

**To CHECK:**

(1) Remove the cover from the Profile.

(2) Position the Profile so that the interruptor arm on the HDA is in front of you.

(3) On the Controller PCB remove the system Z8 with masked ROM, and install a piggyback Debug Z-8 into its socket.

(4) Turn on the Profile

**Observe:** That after approximately 20 seconds the HDA interrupter arm will move from Park position to track 0 position as shown in figures 1 and 2.

(5) Use the .010 inch and the .070 inch wire gauges to insure that the clearance between the top of interrupter arm and optic mounting bracket (See Fig. 3) is between .010 and .070 inches. If it is not then perform the adjustment procedure on the next page.

NOTE: If the following adjustment does not work, try adjusting the position of the interrupter arm on its shaft to obtain the proper clearance.

(The adjustment procedure is located on the next page.)

## TRACK 0 CHECK AND ADJUSTMENT PROCEDURE (continued)

To ADJUST:

(1) Loosen the mounting screws on the optic bracket.

(2) Slide the bracket/optic assembly towards the top of HDA to open the gap between the interrupter arm and the optic mounting bracket.

(3) Slide the 50 mil. wire gauge into the gap, being careful not to disturb interrupter arm.

(4) Slide the bracket assembly down until the top of the bracket and the interrupter arm close lightly on the gauge.

(5) Carefully tighten mounting screws so as not to disturb the adjustment.

(6) Turn off the Profile and replace the Debugger Z8 with the System Z8.

(7) Turn on the Profile and wait approximately 2 minutes as it performs its Scan sequence. At the end of the Scan sequence the interrupter arm should be returned to the Park position.

(8) Turn off the Profile.

(9) On the Controller PCB remove the System Z-8, and install the piggyback Debug Z-8 in its socket.

(10) Turn on the Profile and recheck the clearance between the optic bracket and the interrupter arm as described above. Reperform the adjustment until the clearance is OK.

(11) Turn off the Profile and replace the Debug Z8 with the System Z8.

(12) Reinstall the Cover on the Profile.

# HDA FORMATTING PROCEDURE

The following equipment will be needed for this procedure

Apple ///
Profile Interface PCB for the Apple ///
Profile Interface Cable
Jumper (a 2 inch length of 22 ga. wire with small alligator clips at both ends will do)
Debugger Z8
Format software (Profile format diskette #889-0013)

1. Install the Profile Interface PCB in slot 1 of the Apple /// and connect the Profile Interface Cable from it to the Profile.

2. Remove the cover from the Profile. If instructions are needed refer to the Module Removal and Replacement Procedures in this section.

3. Remove the system program Z8 from the Controller PCB and insert a Debugger Z8. If at all possible do not remove the prom from the piggyback socket as this can cause intermittent failures because of damage to the piggyback socket.

4. Turn on the Profile and wait 30 seconds for the HDA motor to come up to speed.

   **Note:** When the Profile is turned on, its firmware will flash the Ready LED as the power comes up. After that function is performed the firmware program in the Debugger Z8 will not turn the Ready LED on again until the program in the Apple /// initiates communications with the Profile.
   (If LED comes on steady at power on "and stays on", this symptom may indicate a bad E-PROM).

5. Boot the Format program.

**Observe:** the Ready LED comes on steadily. If it does not, check all connections between the Apple /// and the Profile.

**Note:** the program may prompt you that the Profile has incorrect FD.ROM version 03.11. This is normal the Format program will work OK.

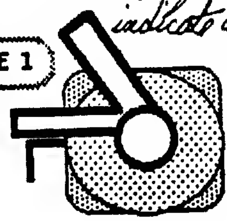
6. Press <RETURN>, then as prompted by the display, install the jumper to short the two pins of P7 on the Controller PCB together (refer to the illustration of the Controller PCB on page 2.18 to help you find P7).

**Note:** the statement "press any key", as now displayed, is incorrect, it should read "press RETURN" **THIS IS TRUE FOR THE REST OF THE FORMAT PROCEDURE**

7. Press <RETURN> and watch the interrupter arm on the Hard Disk Assembly (HDA), it should step from track 0 to the park position as shown below in approximately 180 seconds.

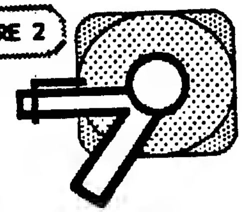
NOTE: If after pressing RETURN the interrupter arm does not move and the screen immediately displays the message stated in Paragraph 8, below (as if it had successfully formatted), this symptom may indicate a bad Z8, P/N 338-8603.

FIGURE 1



INTERRUPTOR ARM IN PARK POSITION

FIGURE 2



INTERRUPTOR ARM IN TRACK 0 POSITION

**Note:** If the arm did not complete the scan swap the HDA to a known good Profile and retry. If Format still does not occur the HDA is probably faulty replace it.

8. After completion of the scan the screen display will tell you if the formatting was succesful or not. (if there was an error in formatting the screen will display an error code, recheck all connections on the Pro-File and between the Pro-File and the host computer.)

**Observe:** If the formatting was successful the Ready LED will come on steadily and the screen will display.

"Formatting completed. Pass
Remove jumper. Press any key to continue"

**Caution:** At this time remove the jumper from P7 to prevent damage to the unit.

9. Press <**RETURN**> as prompted . The following should occur within the next 2 and 1/2 minutes:

**Observe:** The profile will now automatically:
* Scan all sectors, heads and tracks
* Compare buffers on track 77
* Certify all sectors on track 77
* Initialize spare tables on track 77

At the end of each process listed above the screen display should indicate "pass".

**Note:** the last line on the screen display "press <**RETURN**> when profile is ready" only indicates that if you have more than one profile to format, the diskette does not have to be rebooted each time.

## FINAL SYSTEM TEST (FST) PROCEDURE

The following equipment will be needed for this procedure

| | |
|---|---|
| Apple /// | A/// Profile Interface PCB |
| FST Software (APN # 889-0029) | Profile Interface Cable |

1. Install the Profile Interface PCB in slot 1 of the Apple /// and connect the Profile Interface Cable from it to the Profile.
2. Ensure that there is a system ROM Z8 installed on the Controller PCB.
3. Turn on the Profile and wait 2 minutes for the Pro-File to complete its Scan sequence.
4. Boot the FST program. Observe that for 10 minutes the Profile will write and verify each track in sequence from track 0 to track 152 (the Ready LED will blink as each operation occurs). You should see a screen like the one below.
5. Run FST for the specified period (15 minutes, or 48 hours). If an error line occurs (described below) determine if it is fatal by checking the MAX ERRORS ALLOWED column for the error code on the Criteria Sheet on the opposite page.
6. To terminate the test press <ESCAPE>.

```
P  FINAL SYSTEM TEST
 TOTAL BLOCKS   TOTAL       I/O           PIPPIN        COM    LOGICAL    PHYSICAL
 TRANSFERRED    ERRORS     STATUS         STATUS        TIME   BLOCK      CYL HEAD SECTOR
                         R1 R2 R3 R4   S1 S2 S3 S4
R  aaaaaaaa     bbbbbb   cc cc cc cc   dd dd dd dd      eeee   ffff       gg   g    gg
```

The STATUS LINE reflects the conditions occurring during the current block transfer. The values in the STATUS LINE should always be changing as FST exercises the Profile.

| |
|---|
| a = Total number of blocks transferred during the test. This number will be continuously incrementing as long as the test is being run. |
| b = Total errors that have occurred throughout the test. This number should equal the number of error lines at the bottom of the FST screen. |
| c = These bytes relate to the I/O status bytes the Profile sends to the host operating system during communications. |
| d = These bytes relate to the particular status code/s that were sent from the Profile to the host (FST test program). |
| e = Indicates the time elapsed for the current block transfer. |
| f = The Logical block sent by the host (FST test program). |
| g = Indicates the Cylinder (Track), Head, and Sector being read from or written to. |

IF AN ERROR OCCURS, THE STATUS LINE FOR THAT ERROR WILL BE PERMANENTLY DISPLAYED AT THE BOTTOM OF THE FST SCREEN. THE ERROR CODE IS TAKEN FROM THE "d" FIELD AS DESCRIBED ABOVE. YOU MAY INTERPRET THIS ERROR BY COMPARING IT TO THE CRITERIA SHEET ON THE OPPOSITE PAGE. A MORE DETAILED EXPLANATION MAY BE FOUND ON PAGE 2.58 AND 2.59. THE LOCATION OF THE SECTOR THE ERROR OCCURRED ON MAY BE FOUND IN THE "g" FIELD OF THE ERROR LINE.

```
R  aaaaaaaa     bbbbbb   cc cc cc cc   dd dd dd dd      eeee   ffff       gg   g    gg
```

# FINAL SYSTEM TEST (FST) CRITERIA SHEET

10/20/83

| FINAL SYSTEM TEST (FST) ERROR STATUS CODES | MAX ERRORS ALLOWED |
|---|---|
| 00 02 00 00<br>SEEK TO WRONG TRACK | 6 |
| 00 80 00 00<br>CAN'T READ 3 SECTORS AFTER SEEK | 0 |
| 00 82 00 00<br>SEEK TO WRONG TRACK<br>CAN'T READ 3 SECTORS AFTER SEEK | 0 |
| 04 00 00 00<br>CAN'T FIND TARGET HEADER IN 9 REVS | 0 |
| 04 04 00 00<br>SPARING OCCURRED<br>CAN'T FIND TARGET HEADER IN 9 REVS | 2 |
| 04 08 00 00<br>UNABLE TO READ STATUS SECTORS<br>CAN'T FIND TARGET HEADER IN 9 REVS | 0 |
| 05 00 00 00<br>CAN'T FIND TARGET HEADER IN 9 REVS<br>REQUESTED OPERATION FAILED | 0 |
| 05 80 00 00<br>CAN'T READ 3 SECTORS AFTER SEEK<br>CAN'T FIND TARGET HEADER IN 9 REVS | 0 |
| 08 00 00 <01 TO 09> (SEE NOTE 3)<br>SOFT READ ERROR | 99 |
| 08 00 00 <10 OR HIGHER> (SEE NOTE 3)<br>HARD READ ERROR | 8 |
| 08 04 00 00<br>SPARING ROUTINE<br>READ ERROR | 10 |
| 09 00 00 00<br>READ ERROR OR REQUESTED OPERATION FAILED | 10 |
| 10 80 00 00<br>CAN'T READ 3 SECTORS AFTER SEEK<br>CAN'T READ 3 SECTORS AFTER 2 RESEEKS | 0 |
| 15 80 00 00<br>CAN'T READ 3 SECTORS AFTER SEEK<br>CAN'T FIND TARGET IN 9 REVS OR REQUESTED OPERATION FAILED<br>CAN'T READ 3 SECTORS AFTER 2 RESEEKS | 0 |
| 15 82 00 00<br>SEEK TO WRONG TRACK<br>CAN'T READ 3 SECTORS AFTER SEEK<br>CAN'T FIND TARGET IN 9 REVS OR REQUESTED OPERATION FAILED<br>CAN'T READ 3 SECTORS AFTER 2 RESEEKS | 0 |
| 80 00 00 00<br>3 BYTE SEPARATOR BETWEEN WRITE BUFFER AND STATUS TABLES OR S2-3 SET. SPARE TABLE UPDATE OCCURRED. BUFFER DATA IS CHANGED. | 0 |

**NOTES:**

1. A "BLOCK ID MISMATCH" OR A "BUFFER COMPARE FAILED" IS NOT ALLOWED
2. ANY COMBINATION OF ERRORS EXCEEDING 99 TOTAL IS NOT ALLOWED
3. BRACKETS INDICATE A RANGE OF NUMBERS THAT CAN OCCUR

## QUICK DEBUGGER TEST PROCEDURE

The following equipment will be needed for this procedure

| |
|---|
| Apple /// |
| Profile Interface PCB for the Apple /// |
| Profile Interface Cable |
| Quick Debugger Software Version E00.07 (APN# 889-0004) |
| Silentype Printer |

The Quick Debugger program reads the spares table from the Pro-File and prints the original sector location of every spared sector listed in that table.

1. Install the Profile Interface PCB in slot 1 of the Apple /// and connect the Profile Interface Cable from it to the Profile.

2. Ensure that there is a Z8 with standard system ROM installed on the Controller PCB.

3. Turn on the Profile and wait 2 minutes for the Pro-File to complete its Scan sequence.

4. Connect the Silentype to Port A on the back of the Apple ///.

5. Boot the Quick Debugger program.

**Observe:** The Quick Debugger command prompt line is displayed as shown below.

COMMAND (B,F,P,Q,R,S,T,V,W,?)=>

6. Type <S> to select the Get Status command.

**Observe:** a. The line shown below is displayed next to the command prompt line.

STATUS-GET STATUS BLOCK 00 00 00 00  00 00 00
00

b. The Ready LED goes out as the interrupter arm on the HDA goes to track 77 to read the spares table.

c. A new command prompt line is displayed.

(continued on the next page)

7. Type <P> to select the Print Status command.

**Observe:** The line shown below is displayed on the CRT.

PRINT STATUS TO SCREEN OR PRINTER (S/P)

8. Type <P> to select the printer.

**Observe:** The Silentype prints out as shown below.

```
CONTROLLER VERSION - 03.98


SPARED SECTOR
TOTAL   00

  LIST        CYL HD SECT


BAD BLOCKS
TOTAL   00

  LIST        CYL HD SECT
```

(End of this procedure.)

## TABLE OF CONTENTS

## PART 1 INTRODUCTION

The Formatter/Debugger program is provided as a service aid for troubleshooting block I/O devices such as the ProFile disk drive. It is a program that allows you to directly communicate with a block I/O device and exercise it through a series of unique commands or build simple test sequences that will assist in debugging the device.

It is a particularly helpful tool for servicing devices that have been returned because of a malfunction, etc.

For example, the program can be used to detect an error and then by using the loop on error function, you can use an oscilloscope to analyse the circuit that caused the error.

You can use the program to service a drive containing either the Format/Debugger ROM Z8 or the Standard System ROM Z8. (The Standard System ROM Z8 is the operational ROM in the Z8 that is shipped in the disk drive.) The command summary, part 3, specifies which type of ROM must be in the drive to use a given command.

## PART 1.1 HOW TO USE THIS PROGRAM

To use this debugger properly, you should be aware of some of the design concepts. In designing the user interface (command structure) it was decided to use single character commands (explained later). This permits you to type in the command very rapidly and use options (which are not always required) to modify certain test variables.

The most used test variables are the three byte logical block that is treated as either a 24-bit number or as three 8-bit numbers. As a 24-bit number, the variable represents a standard logical block with a decimal range of 0-16 million blocks (Hex 000000- FFFFFF). As three 8-bit numbers, each variable has a range of 0-255 (Hex 00-FF).

The program makes no assumptions about the use of the test variable; it just gives you two ways to talk to it.

You can consider it as a large (24 bit) number or as three smaller (8 bit) numbers. This variable is sent to the disk exactly as a 24-bit number which the firmware decides how to interpret.

You, the user, must know how the firmware will react to understand what the firmware is doing with the block number.

## PART 1.2 TYPICAL COMMAND EXAMPLES

NOTE: Data shown in <> is meant to be typed.
Data shown in [] or () is optional.

To help make the concept of this program more clear, here are some examples that show what the more common commands do.

<R> (Read)

This command requests data to be read from the unit being tested. It passes the command and the BLOCK variable to the unit and transfers the data from the unit to the input buffer (see the display command, part 2.2.3, for information on displaying the input buffer).

R by itself does not change the BLOCK variable; it uses its current value. However, you can change the block variable by adding a modifier to the command in the form of a number.

This number is normally treated such that leading zeros are assumed, thus 0, 00, 0000, etc. all produce the 24-bit value 000000. For example:

```
R0 or R00 or R000000, etc.      (read block 000000)
R13 or R013 or R 0013, etc.     (read block 000013)
```

The above example is applicable only when using the Standard System ROM Z8. Notice that the BLOCK variable sent is either 000000 or 000013.

The number 13 is the same as 013 or 000013 and produces the value 000013 in the BLOCK variable.

NOTE: The number 13 in the example is a HEX number, not a decimal number.

13 Hex = 19 Decimal

Remember that the firmware in the disk drive being tested determines how the BLOCK variable will be treated. Normally it is treated as a logical block.

In the example on the following page, let's change the command to show how it would be used with the Format/Debugger ROM Z8:

For example: <RT1H2S3> or <RT01H02S03>, etc. (read block 010203)

Notice that the command now has 3 modifiers in the form of T and a number, H and a number, and S and a number.

The modifier T (Track) references the first 8-bits of the BLOCK variable, the H (Head) references the second 8-bits, and the S (Sector) references the third 8-bits.

Note that they are separate modifiers and can be used independently.

For example:

If BLOCK = 000000, then the command **<RT5><RETURN>**
will set BLOCK = 050000

If BLOCK = 050000, then the command **<RH3><RETURN>**
will set BLOCK = 050300

If BLOCK = 050300, then the command **<RT16S9><RETURN>**
will set BLOCK = 160309

Note that the last command in the example happened to affect the first and third bytes. Had the last command been RS9 then the BLOCK would have been 050309.

When all three modifiers are used, they must be in the T, H, S sequence.

REMEMBER! The numbers used are always Hexidecimal numbers.

**<W>** (write)

This command requests data to to be written to the unit being tested.

It passes the command and the BLOCK variable to the unit and transfers the data to the unit from the output buffer (see the buffer fill command, part 2.2.1, and the display command, part 2.2.3).

W by itself does not change the BLOCK variable; it uses its current value. However, as was the case with a read command, the BLOCK variable can be changed by adding a modifier.

For example, the commands W0, WT3H2S1, WH9, etc. have the same effect on the BLOCK variable that they do in the Read command.

<+>        (plus)

This command increments the BLOCK variable.  + by itself increments the variable by 1.  For example, if the BLOCK variable was 00001F, then after + it will be 000020 (Note the hex numbers).  +3 will increment the BLOCK by 3 each time. +3T will increment the first 8-bit variable by 3 each time. For example, if the BLOCK was 050311, then +3T will change it to 080311.  H and S work the same way to modify the second and third groups of 8-bit variables.

To provide wraparound and carry, the + command will wrap a 24-bit number at FFFFFF.  It will wrap T at 97 (97 increments to 0) and will set H an S to 0 to provide full wrap.  H will wrap at 3 (3 goes to 0) creating a carry to T and S will wrap at F (F goes to 0) creating a carry to H.  Future enhancements will be to find out what the maximum block count for a device is and then wrap the 24-bit number at that count.

<D>        (Display)

This command displays the contents of the input or output buffers.

D by itself will display the input buffer.
DI is the same as D.
DO will display the output buffer.
DS will decode the contents of the input buffer as extended status information.

The form of the display is the same as that for an APPLE monitor memory dump.  It will display the first 256 bytes of the buffer and pause so that you can study the values.

At the bottom of the screen it asks for <ESCAPE> to terminate, <**RETURN**> to quit, ANY other key to continue.

<**ESCAPE**> stops further display and cancels the rest of the command line effectively stopping processing and returning control to the user.

<**RETURN**> quits the display command and causes the program to go on to the next command.

Pressing any of the other keys, except the space bar, will allow the program to display the next 256 bytes of the buffer.

Pressing the space bar will allow you to display the buffer line by line.

> **CAUTION:** If you just keep hitting a key to see the next 256 bytes you will see first the buffer you requested and then memory above it. There are areas of ram above the buffers that will, when displayed cause your screen to get VERY sick and you will have to either re-boot the program or be very familiar with APPLE III hardware and monitor.

Just in case you are not familiar with the monitor memory display, here is an example. (The monitor doesn't display the descriptive information above the dashed line.)

```
     Hex
  Address  0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
   -------------------------------------------------------
   8000:  00 1A 23 92 FF FE A5 2F 33 34 00 00 00 00 00 00
   8010:  12 11 34 87 FE 44 00 00 3E 4C 00 20 A9 0F C5 00
   etc.
```

## PART 2. COMMAND STRUCTURE

Each command consists of one or more characters and modifiers in command groups.

Each group is separated by one or more spaces.

The command line is one or more command groups.

There is enough space in the command buffer for 255 characters.

Multiple command lines are possible by use of the Macro Add command.

## PART 2.1 COMMAND PROMPT

The program prompt consists of the following two lines:

```
S1 D1
COMMAND (B,C,D,F,G,H,I,L,M,N,O,P,Q,R,S,T,V,W,X,+,-,/,   ?) =>
```

The first line contains two flags, S1 D1, that tell which slot and drive the program is set to test.

The second line of the prompt consists of the first letter of each valid command. A list of the commands is always available by typing H or ? and pressing <**RETURN**>.

NOTE: After typing a command and pressing <**RETURN**> to execute it, you can press <**ESCAPE**> to terminate the command.

However, if you wish to review the command that you just executed for the purpose of changing it, etc., you can simultaneously type <**CONTROL**> <**A**> instead of <**ESCAPE**>.

## PART 2.2 DETAILED COMMAND DESCRIPTIONS

Following are descriptions of some of the commands that require more detailed explanations than others. In depth examples of some of the more commonly used commands such as Read, Write, Increment, and Display were provided in part 1.2. For an overall summary of all commands, refer to part 3.

### PART 2.2.1 BUFFER FILL

<B>[num]<**RETURN**>
- where num is an optional 16 bit hex number (eg.,B0123)

The buffer fill command is used to fill the output buffer with a specific data pattern. It can be used with either the Format/Debugger ROM Z8 or the Standard System ROM Z8 installed in the drive. To use the command, type B followed by a number which will be treated as a 16 bit (2 byte) pattern.

For example, the command

<**R0**><sp><**B1234**><sp><**W0**><sp><**B45**<sp><**W1**><**RETURN**>

would read logical block-0, fill the output buffer with 12341234..., write block-0, fill the output buffer with 00450045..., and finally write this data to block-1.

### PART 2.2.2 CREATE SPARE

<**C**><**RETURN**> ---- the C-command must be the only command on the line.

The create spare command is used to force a peripheral device to transfer a logical block to a new (spare) physical location on the device. The command will then request the block number to be spared and will then request confirmation from the user. If confirmed, the logical block will be spared by the device controller. This command should only be used when the Standard System ROM Z8 is installed in the drive.

Using this command will allow you to fix flaky blocks found during testing. The user will be asked for confirmation of this command. Respond with Y (Yes) or N (no).

NOTE: Do not attempt to use the create spare command when the Format/Debugger ROM Z8, version D3.11 or earlier, is installed in your drive.

## PART 2.2.3 DISPLAY

<D>[I,O,S]<**RETURN**> - where I is input buffer, O is output buffer, and S is the extended status information in the input buffer.

The display command can be used with either the Format/Debugger ROM Z8 or the Standard System ROM Z8 installed in the drive. It is used to display the contents of the input or output buffers.

These buffers occupy the following Hex locations in the computer's memory:

input buffer ----8000H - 8213H
output buffer ---8300H - 8523H

The display will show 256 bytes at a time, scrolling to the next 'page' after each key press.

To end the display and continue executing the command line, press <**RETURN**>.

To abort the command line press <**ESCAPE**>.

With the display on the screen, you can press the spacebar to cause a scroll to the first line of the next 'page'. Then, each time you press the space bar, the display will scroll one line forward.

The Display Status command works only slightly differently in that it decodes the input buffer into Extended status info about the spares and bad blocks and it will not stop until it is finished or until the space bar, <**RETURN**> key, or the <**ESCAPE**> key are pressed.

REMEMBER! The Display Status command will decode anything found in the input buffer so be sure to use the Get Status command first to make sure that the information is valid.

Before using the Display Status command with the Format/Debugger ROM Z8 installed, you must initialize the spare tables (see part 2.2.6) and then use the Get Status command, otherwise the display will contain garbage.

With the Standard System ROM Z8 installed, you only have to issue the Get Status command before displaying the extended status of the input buffer.

Here are some additional tips about using the Display Status command.

- After typing D[S] and pressing **<RETURN>**, press the space bar to stop the listing. Press the space bar again each time you wish to step through another line of the listing. Pressing any other key will cause a fast scan of the listing.

- Pressing **<ESCAPE>** will cancel the rest of the display function.

- Pressing **<RETURN>** will terminate the spare sector listing and start the bad block listing.

## PART 2.2.4 FORMAT

**<F><RETURN>** ---- this command must be the only command in the command line.

The Format command is used with the Format/Debugger ROM Z8 installed in the drive. It is used to erase all old data from memory and lay down a new pattern of address and data.

After formatting a drive with the Format/Debugger ROM Z8 installed, you can type D[I] to get a list of the defective blocks. The list will end with FF FF FF FF. Refer to the documentation provided for the F/D ROM for further details. **WARNING:** This command is very dangerous and should only be used if damage to the address headers has occurred and only after every reasonable attempt has been made to recover other data from the device. The user will be asked to confirm this command. Respond with **<Y>** (Yes) or **<N>** (No).

Remember! <u>This command will erase all previously recorded data.</u>

Following is an example of the error message that will be displayed if
you attempt to format a drive with a Standard System ROM Z8 installed.

| | | I/O | | | | ProFile | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Block | R1 | R2 | R3 | R4 | S1 | S2 | S3 | S4 | S5 | S6 |
| FORMAT S1 D1 | 00 03 5F | 00 | 00 | 00 | 00 | 55 | 55 | 55 | 55 | 00 | 00 |

The 55's in this example are the error indicators.

## PART 2.2.5 GET STATUS

**<G><RETURN>**

The Get Status command works only with the Standard System ROM Z8. It is used to obtain extended status information from the drive and place it in the input buffer.

(You will need to execute the Display command to view the contents.)

The Get Status command makes sure that the status you are going to view is valid.

When using a ProFile you can also get the status by reading block FFFFFF.

## PART 2.2.6 INITIALIZE SPARE TABLE

**<I><RETURN>** ---- this command must be the first command in the command line.
The Initialize command is used by the ProFile Format/Debugger ROM Z8 to setup the spare tables in the ProFile drive.

After the Debugger ROM has formatted the disk, the entire disk is available to read from or write on so that certification of the entire disk is possible.

After the spare table sectors have been certified, the tables need to be initialized to allow the controller ROM to work properly.

The Initialize command is not used when the Standard System ROM Z8 is installed in the drive.

**WARNING:** This command is potentially dangerous as it effectively erases any old spared table data and if used incorrectly will cause the loss of valuable data on the ProFile.

The user will be asked to confirm this command. In response, type <**Y**> (Yes) or <**N**> (No).

## PART 3 COMMAND SUMMARY

Following is a summary of all the commands that can be used with this program:

**BUFFER FILL** B[<RETURN>] or B[num]<RETURN>

Fill the output buffer.
where num is a 16 bit hex fill number
used with both Formatter/Debugger and Standard System ROM Z8s

**CREATE SPARE** C<RETURN>

Force the drive to spare the specified block.
must be the only command on the command line
used only with Standard System ROM Z8

**DISPLAY** <D><RETURN> or <D>[I]<RETURN> or <D>[O]<RETURN> or<D>[S]<RETURN>

Display the I/O buffers.
used with both Formatter/Debugger and Standard System ROM Z8s

**FORMAT** <F><RETURN>

Format the device.
This is a dangerous command
used only with Format/Debugger ROM Z8

**GET STATUS** <G><RETURN>

Get extended status information.
Remember! When using the ProFile, RFFFFFF (read block FFFFFF) also returns status information
used only with the Standard System ROM Z8

**HELP** <H><RETURN> or <H>[E]<RETURN> or
<H>[E2]<RETURN> or <H>[char]<RETURN>

Print a list of commands, or errors, or a detailed description of each command.
Where E is to display errors when the Standard System ROM Z8 is installed.
Where E2 is to display errors when the Format/Debugger ROM Z8is installed.
Where char is any legal command shown in this command summary.

**INITIALIZE SPARE TABLE** <I><RETURN>

Clear the spare block table.
this is a dangerous command
must be the first command on the command line
used only with Format/Debugger ROM Z8
requires confirmation (Y or N)

**LOOPON** <LPF>[S,H,D]<RETURN>

Send Loop on Format commands to the firmware.
where S = sector marks
H = address headers
D = data field
LPF can be followed by any combination of S, H, and D
executed following a Read Track command to loop on format of the current track
(eg., R[T] reads the T byte of the block variable to determine the current track)
used only with Format/Debugger ROM Z8

**MACRO** <M>[A(0-9),C,L,0-9]<RETURN>

Use macro functions (alternate command lines).
where A = add current line to macro table
C = clear all macros
L = list macros
used with either Formatter/Debugger or Standard System ROM Z8
not effectively implemented at this time

**N,O** Not implemented yet

**PAUSE** <P>[<**RETURN**>] or
<P>[A(num),C,(num),E(num),N(num)]<**RETURN**>

Pause and wait for user.
Where A = any error/nonerror
C = clear any error/nonerror
E = on error
N = on no error
(num) is a 16-bit mask of S1 S2

Note: All four digits of the 16-bit mask must be turned on

used with either Formatter/Debugger or Standard System ROM Z8

**QUIT** <Q>[<**RETURN**>]

Return to calling routine (This module is a subroutine).

**READ** <R>[(num),T(num),H(num),S(num)]<**RETURN**>

Read a block
where (num) = 24 bit number (8 bit if T,H,S)
T = first (Hi) byte of block
H = second (Mid) byte of block
S = third (Lo) byte of block

Remember! The firmware of the device tested determines how the number is treated. See the following example:

T H S - Formatter/ Debugger ROM
ProFile 00 00 00
Hi Mid Lo - Standard System ROM Z8

>O means read to the output buffer ( Eg., R23>O )
used with either Formatter/Debugger or Standard System ROM Z8

**SCAN** <S><RETURN>

Order the firmware to scan the entire disk (read only).
Requires confirmation (Y or N)
after scanning, use D[I] to get list of any bad blocks found during scan
used only with Format/Debugger ROM Z8

**TURN OFF STEPPER** <T><RETURN>

Turn off the power to the stepper motor.
used with Format/Debugger ROM Z8 but not normally used with Standard System ROM Z8

**V** Not implemented yet

**WRITE** <W>[(num),T(num),H(num),S(num)]<RETURN>

Write to a block (same format as read).
where (num) = 24 bit number (8 bit if T,H,S)
T = first (Hi) byte of block
H = second (Mid) byte of block
S = third (Lo) byte of block

Remember! The firmware of the device tested determines how the number is treated. See the following example:

```
T    H    S  - Formatter/ Debugger ROM
ProFile   00   00   00
Hi  Mid   Lo - Standard System ROM Z8
```

<I means write from the input buffer ( eg., W23<I )
used with either Formatter/Debugger or Standard System ROM Z8

**XECUTE** <**X**><**RETURN**> or X[E(num)]<**RETURN**>

Execute the current command line again.
where E = execute the line to this point on error
num = 16 bit error mask of S1 S2
X[E] will execute a function over and over again, if an error has occurred, up to the point where the error occurred

\+ <+>[(num),T(num),H(num),S(num)]<**RETURN**>

Increment the block number.
where (num) = 24 bit number (8 bit if T,H,S)
T = first (Hi) byte of block
H = second (Mid) byte of block
S = third (Lo) byte of block

\- <->[(num),T(num),H(num),S(num)]<**RETURN**>

Decrement the block number.
where (num) = 24 bit number (8 bit if T,H,S)
T = first (Hi) byte of block
H = second (Mid) byte of block
S = third (Lo) byte of block
the - command does not decrement properly for H and S modifiers

/ </>[S(num),T]<**RETURN**>

Choose options (/H for help).
where S = slot set
T = translate current block to cylinder/head/sector

? Help.

## PART 4 NEW FEATURES

The following new features have been developed since the release of DSKDBG V-E00.16 and are included in DSKDBG V-E00.17.

* The Help errors command has been slightly modified. <HE> or <HE1> provides help for the Standard System ROM Z8 and <HE2>
  returns help for the Format/Debugger ROM Z8.

* The Help command lists the form of the extended help commands.

* Display now has a command to allow the decoding of the status table into the version, spare list, and bad block list.

  DS = display status info.

* Use <ESCAPE> or <RETURN> to terminate a long list of spares or bad blocks.

* An additional modifier is available for read/write commands that allows you to specify which buffer you are reading to or writing from. For example, a read command followed by >O means read to the output buffer. A write command followed by <I means write from the input buffer.

## PART 5 TYPICAL PROBLEMS AND HOW TO AVOID THEM.

* The + (Increment) command doesn't work.

  This is to date the most common problem. Usually the command line will look something like

  RO PE + X

  What you were trying to do is sequentially read thru the disk starting at block 0. What you said was

  Read block 0 (block = 0), Pause on error,
  Increment block (block = 1), Repeat line,
  Read block 0 (block again = 0) ........

  To fix this problem just do one line to set block 0 and then go on to the next line to do the Read, Pause on error etc.

For example:

<R0><**RETURN**>
<R><sp><**PE**><+><**X**><**RETURN**>

* Display Status Won'T Work Or Won't Stop

The display status command allows you to display the input buffer and make assumptions about what the data means.

For it to work, the Get status command must successfully read the status informtion from the drive.

If the input buffer has garbage in it, the Display Status command may go round and round trying to display all the spared sectors and bad blocks.

To stop the command when it is caught in a loop or is listing a bunch of bad blocks, simply press the <**RETURN**> key or the <**ESCAPE**> key. The functions of the other keys are the same as for all other display commands.

## PART 6 KNOWN BUGS IN VERSIONS E00.17 AND E00.16

The Macro command has 3 known bugs.

The first occurs when a macro is added to the list and there is already one there of that number. The effect is to make both of them disappear.

The secondbug occurs when the macro is invoked on a line with the X command (eg., M1 X). This disables the <**ESCAPE**> key so the program can only be halted by re-booting.

The third bug also involves the X command. When a macro is added (eg., R MA1 X), it will keep asking to delete the old macro.

The - command doesn't decrement properly for H and S modifiers

## PART 7 STATUS BYTE DESCRIPTIONS

This part provides a bit-by-bit description of the four status bytes available with the Standard System ROM Z8 or the Format/Debugger ROM Z8.

### PART 7.1 STATUS BYTES WITH STANDARD ROM V-3.98 INSTALLED

**STATUS 1**

7 = 1 if ProFile did not receive 55 to its last response

6 = 1 if write or write/verify was aborted because
>532 bytes
if data were sent
if ProFile couldn't read its spare table

5 = 1 if host's data is no longer in RAM because ProFile updated its spare table

4 = 1 if SEEK ERROR - unable in 3 tries to read 3 consecutive headers on a track

3 = 1 if CRC error (only set during actual read or verify of write/verify, not while trying to read headers after seeking)

2 = 1 if TIMEOUT ERROR (couldn't find header in 9 revolutions - not set while trying to read headers after seeking)

1 = N/A

0 = 1 if operation unsuccessful

(continued on the next page.)

**STATUS 2**

7 = 1 if SEEK ERROR - unable in 1 try to read 3 consecutive headers on a track

6 = 1 if spared sector table overflow ( > 32 sectors spared)

5 = N/A

4 = 1 if bad block table overflow ( > 100 bad blocks in table)

3 = 1 if ProFile unable to read its status sector

2 = 1 if sparing occurred

1 = 1 if seek to wrong track occurred

0 = N/A

**STATUS 3**

7 = 1 if ProFile has been reset

6 = 1 if block number invalid

* 5 = 1 if block I.D. at end of sector mismatch

4 = N/A

3 = N/A

* 2 = 1 if ProFile was reset

* 1 = 1 if ProFile gave a bad response

* 0 = 1 if parity error

* These bits are set by the SOS ProFile driver and are not used by the Dskdbg ProFile.IO.

1 - 0001
2 - 0010
3 - 0011
4 - 0100
5 - 0101
6 - 0110
7 - 0111
8 - 1000
9 - 1001
A - 1010
B - 1011
C - 1100
D - 1101
E - 1110
F - 1111

**STATUS 4**

7 - 0 = the number of errors encountered when rereading a block after any read error

## PART 7.2 STATUS BYTES WITH FORMATTER/DEBUGGER ROM FD3.98 REV 11 INSTALLED

**STATUS 1**

7 = 1 if Profile did not receive 55 to its last response

6 = 1 if no index found during formatting

5 = 1 if no sector mark found during formatting

4 = 1 if SEEK ERROR - unable to read 3 consecutive headers on a track (one try only)

3 = 1 if CRC error (only set during actual read or verify of write/verify, not while trying to read headers after seeking

2 = 1 if TIMEOUT ERROR (couldn't find header in 9 revolutions - not set while trying to read headers after seeking)

1 = N/A

0 = 1 compare error on a write compare

**STATUS 2**

7 = 1 if ProFile has been reset

6 = 1 if track number invalid while reading or writing a sector

5 = N/A

4 = N/A

3 = N/A

2 = N/A

1 = 1 if seek to wrong track occurred

0 = N/A

(continued on the next page)

## STATUS 3

D7, D6, and D5, along with D4 and D3 from STATUS 1, tell why a write compare operation failed.

| | D7 | D6 | D5 |
|---|---|---|---|
| write timeout | 0 | 0 | 0 |
| read timeout | 1 | 0 | 0 |
| read CRC | 1 | 1 | 0 |
| data compare | 1 | 1 | 1 |

## STATUS 4

7 - 0 = the number of errors encountered when formatting data fields or scanning the disk.

# SECTION 3

# APPENDICES

# ProFile Service Manual
# Section 3
# Appendices

## TABLE OF CONTENTS

## HOW TO USE THIS SECTION

This section contains general information on the functional operation of the 4 modules in the Pro-File, and its firmware operation.

It is designed to be referred to from the other sections in this manual, but you may wish to use it to help you better understand Pro-File operation.

If you are unfamiliar with Winchester disk drives, then a good place to start would be with the Pro-File HDA description in this section.

Then if you would like general information on each of the 4 Pro-File modules read the "Overview of the Pro-File".

## OVERVIEW OF THE PRO-FILE

The following description will give you an overview of the technical details of the ProFile. It is intended to be a summary only, and is not a detailed explanation of the engineering aspects of the ProFile.

### General Information on the Pro-File

The intelligent Controller (Controller PCB), which is built into ProFile is continually checking the operation of the disk. ProFile performs many operations to assure that the user will never see a problem.

These operations start the moment ProFile is turned on. After power-up, ProFile does a Scan operation of the entire disk surface, and checks for any errors.

Upon any data read error, an extensive analysis of the error is performed to determine whether a media error exists. If that is the case, the data will be moved to a spare sector of the disk. That part of the disk with a media error will no longer be used, it is "spared".

In most cases, the error recovery routines in ProFile will be able to extract the data even from a bad sector. The recovery operation includes more than 300 retries under various conditions. Maps of the bad sectors are redundantly recorded on ProFile (these maps are called spares tables), so that an error in the map will not cause a problem in operation.

The ProFile moves the heads to a "parking position" off the data zone after three seconds of no activity. This prevents the loss of data if, for instance, the ProFile is dropped or jarred. ProFile constantly checks for errors during operation.

After any change in tracks, ProFile verifies that the operation has been performed correctly. ProFile also checks that the heads are positioned accurately on a track before any read or write operation is performed.

Unless the system requests that the ProFile do otherwise, data is always verified after a write operation. In all these cases, ProFile will correct the problem so that no errors occur.

Data can be transferred from the ProFile to the system at up to one Mbyte per second DMA rate. Data is interleaved at a 5:1 ratio, which allows three 512 byte sectors to be transferred on each rotation. MFM encoding allows the maximum data storage capacity with low formatting overhead.

**Note:** 1. For more detailed information on Scan operation, and error recovery routines refer to the firmware routine's functional description in this section.

2. For more information on the format (including spares tables), used for the Pro-File HDA refer to the Pro-File HDA description in this section.)

**What is ProFile?**

ProFile is a Winchester technology hard disk drive designed to operate with a host computer. It has a formatted storage capacity of 5 Megabytes, which is essentially the same as 35 floppy disks (the Apple III disk drive uses floppies that have a capacity of 140K Bytes).

Functionally, the ProFile consists of four major modules:

1. The Controller PCB
2. The Analog PCB
3. The Power Supply
4. The Hard Disk Assembly (HDA) with motor control PCB

The discussions on the following pages describe the general function of these modules.

## 1. The Controller PCB

Functionally, the Controller provides communications with the host computer, provides signals to read and write serial data on the disk, moves the heads to the proper track, and monitors error conditions.

The Controller consists of a Z8 microprocessor, 2K bytes of RAM, error detection logic, and read/write control logic.

The Z8 provides an intelligent interface to the host computer. High level commands, such as read, write, and status, are generated by the host computer to through the Pro-File interface cable to the Z8. The Z8 uses the buffer area in RAM to temporarily store any data being read from or written to the disk.

The Controller also interfaces to the Analog card to pass head control information to it. In this way the Controller determines when read/write operations will take place.

The Z8 controls disk operations in the HDA. Basically it sends the stepper motor in the HDA step pulses to move the heads from track to track (such moves are called "seeks"), selects one of four read/write heads, and enables the different functions (i.e. sync, clock data, etc.) on the Analog PCB to perform the read or write operation called for by the host.

Read/Write functions are performed by the read/write logic on command from the Z8. This logic in turn controls the parallel to serial data conversion when writing, and the serial to parallel data conversion when reading.

To ensure the proper transfer of data, the Controller does a CRC (cyclic redundancy check) of the serial data. If an error occurs, the Z8 will automatically perform an error recovery routine and try to relocate the data onto a different section of the disk. The sector causing problems will be removed from use to prevent future errors.

After 3 seconds of no communication with the host, the Z8 on the Controller PCB will move the head to a Park position on the disk (track 155 a non data track), to prevent accidental damage to the disk surface in the event of a hardware failure (such as power loss). Once in Park position for 0.75 seconds, the Z8 removes power from the stepper motor to prevent heat build-up in the drive.

The READY light on the front of the ProFile is lit whenever the Controller is idle (not busy).

## 2. Analog PCB

The Analog PCB serves as the interface between the Controller and the Head Disk Assembly (HDA).

The Analog PCB consists of a data encoder, a data decoder, write driver, head select logic, automatic gain control (AGC) preamplifier, read detector, phase lock loop (PLL), and sector detector.

The head select matrix selects one of the four heads for a read or write operation in response to control signals from the Z8 on the Controller PCB.

The ProFile has two fixed disks in its HDA, and there are two heads for each disk (one for each side, since the disks are double sided). Thus you have a choice of four heads, depending on which section of the disk you are trying to access.

It is not necessary for the host computer to know which section of the disk it is trying to access; the Controller and the Analog PCB take care of that.

During a write operation, the serial data is encoded using a technique known as Modified Frequency Modulation (MFM).

During a read operation, the AGC circuit amplifies the low level head signal (.6 to 2.0 mv) to a fixed signal level (1.0 volt). The read detector simply shapes the signal so that it appears in a standard fashion.

The PLL and data decoder then convert this signal back into serial data, which is passed to the Controller, which in turn converts it to parallel data and passes it to the host computer.

High speed, low noise ECL (emitter coupled logic) provides wide margins for the Analog electronics PCB of the ProFile.

When the disk is initially formatted, the sector boundaries are written to the disk (this is done by removing all read signals from certain sections of the media). During the read operation, the sector detector looks for these areas of no read signal, and signals the Controller that a sector boundary has been found.

## 3. Switcher Power Supply

The power supply provides the +5VDC, and ±12VDC needed by the ProFile for operation.

The supply also contains monitoring circuitry to detect a power failure. This monitoring circuitry senses a power failure before the internal DC voltages drop.

If a power failure should occur the monitoring circuitry uses a signal called Power OK (POK) to reset the Z8 on the Controller PCB.

This allows the intelligent Controller in ProFile to prevent any data loss if the power fails or is turned off accidentally. The system will not begin any operation until the power is on for at least one second.

Once a failure is detected, the head current is shut off to prevent the accidental writing of false data that would otherwise occur if a write operation were in process when the power failed. The power supply is completely shielded to eliminate the effects of electro magnetic radiation.

## 4. Head Disk Assembly (HDA)

The ProFile HDA is a random access storage device with two non-removable 5 1/4 inch discs as storage media. Each disk surface employs one movable head to service 153 data tracks. The total formatted capacity of the four heads and surfaces is approximately 5 Megabytes (16 sectors per track, 512 bytes <A/// format> or 532 bytes <Lisa format> per sector, and 612 tracks).

High reliability is achieved through the use of a band actuator and open loop stepper head positioning mechanism. The read/write heads are mounted on a ball bearing supported carriage which is positioned by the band actuator connected to the stepper motor shaft.

Mechanical and contamination protection for the heads, actuator, and discs are provided by an impact resistant aluminum enclosure. A self contained recirculating system suplies clean air through a 0.3 micron filter.

A special spindle pump assures adequate air flow and uniform temperature distribution throughout the head and disk area.

Thermal isolation of the stepper and spindle motor assemblies from the disc enclosure provides significantly greater "off track" margin (temperature changes are less likely to cause read errors).

A brushless DC drive motor rotates the spindle at 3600 RPM. The spindle is driven directly with no belt or pulley. The motor and spindle are dynamically balanced to insure a low vibration level.

Depending on the revision of Motor Control PCB on the HDA a physical brake mechanism, or a dynamic brake (involving reverse biasing the coils on the disk motor) may be used to provide a fast stop to the spindle motor when power is removed. (continued on the next page)

**4. Head Disk Assembly (HDA)** (continued)

The recording media consists of a lubricated thin magnetic oxide coating on a 130 mm diameter aluminum substrate. This coating formulation, together with the low load force, low mass Winchester type "flying heads", permits reliable contact start/stop operation.

The HDA (hard disk assembly) can be operated from 10~C to 60~C/. This wide operating range, combined with a 75% efficient switching power supply allows ProFile to operate from 10 to 40~C in still air without a fan.

(For more information on the Pro-File HDA format (including spares tables), used for the Pro-File HDA refer to the Pro-File HDA description in this section.)

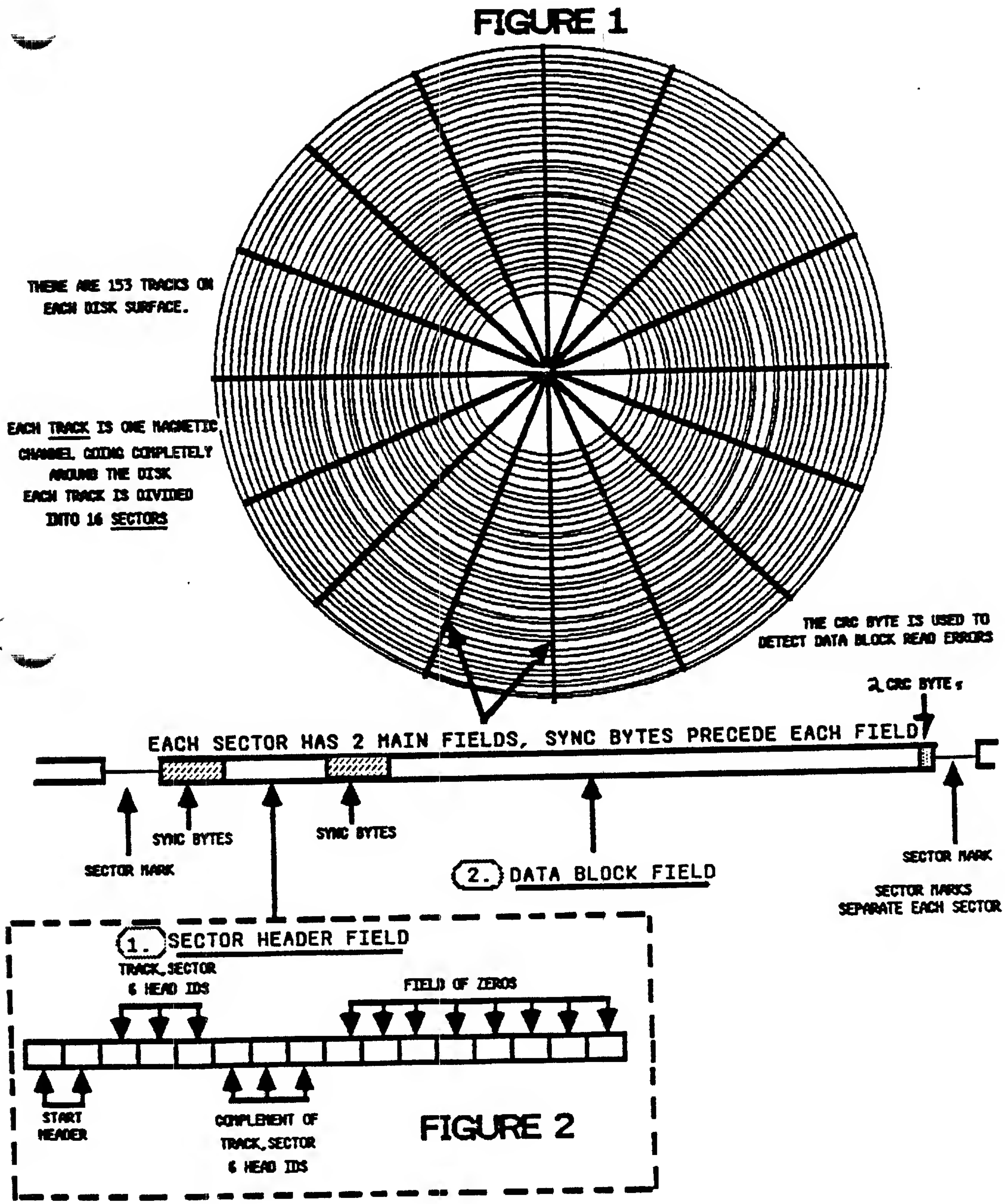


FIGURE 1
THERE ARE 153 TRACKS ON EACH DISK SURFACE.
EACH TRACK IS ONE MAGNETIC CHANNEL GOING COMPLETELY AROUND THE DISK
EACH TRACK IS DIVIDED INTO 16 SECTORS
THE CRC BYTE IS USED TO DETECT DATA BLOCK READ ERRORS
2 CRC BYTES
EACH SECTOR HAS 2 MAIN FIELDS, SYNC BYTES PRECEDE EACH FIELD
SYNC BYTES
SYNC BYTES
SECTOR MARK
2. DATA BLOCK FIELD
SECTOR MARK
SECTOR MARKS SEPARATE EACH SECTOR
1. SECTOR HEADER FIELD
TRACK, SECTOR & HEAD IDS
FIELD OF ZEROS
START HEADER
COMPLEMENT OF TRACK, SECTOR & HEAD IDS
FIGURE 2

# PRO-FILE HDA DESCRIPTION (THE HARD DISK ASSEMBLY)

## PHYSICAL DESCRIPTION OF THE HDA

The HDA contains 2 rigid disks, which are constantly rotating at 3600 RPM. Each disk has 2 surfaces, (top and bottom), making a total of 4 surfaces numbered 0, 1, 2, and 3 (see figure 1).

The disk surfaces are covered with a metallic film which is very easily magnetized. In the beginning, when the disk is first made, there is no magnetic information on it at all.

No information will be put on the disk until its magnetic areas have been specially arranged, or **formatted** with a Format program run from the Host computer system. A discussion of the features common to formats used for the Pro-File HDA is explained later in this discussion.

Each surface has a device called a head, which converts electrical impulses into magnetic impulses and vice versa. The heads are numbered after the surfaces they cover, that is, 0, 1, 2, and 3.

During a write operation, binary data in the form of a bit stream is written on the disk surface by the head. As the disk surface rotates under the head, each pulse in the bit stream will cause a small area on the medium (disk surface) to be polarized.

Extreme closeness of the head to the medium (in the Pro-File's case 20 microinches) is a distinguishing characteristic of Winchester type disk drives.

The head rides (flies) on the thin cushion of air between it and the media (something like an airplane wing). If particles as small as a piece of dust are allowed into the head chamber, they can cause the head to lose its flight stability. The head may then become erratic causing it to crash into the media, and destroy some areas on the disk.

For this reason, the HDA is kept in an air-tight enclosure with a small filtered aperture. This allows atmospheric pressure equalization while preventing potentially dangerous particles from gaining access.

During a read operation, the head senses the magnetic areas on the disk surface as they pass under the head, and produces an electrical impulse for each change in their polarity.

FIGURE 1

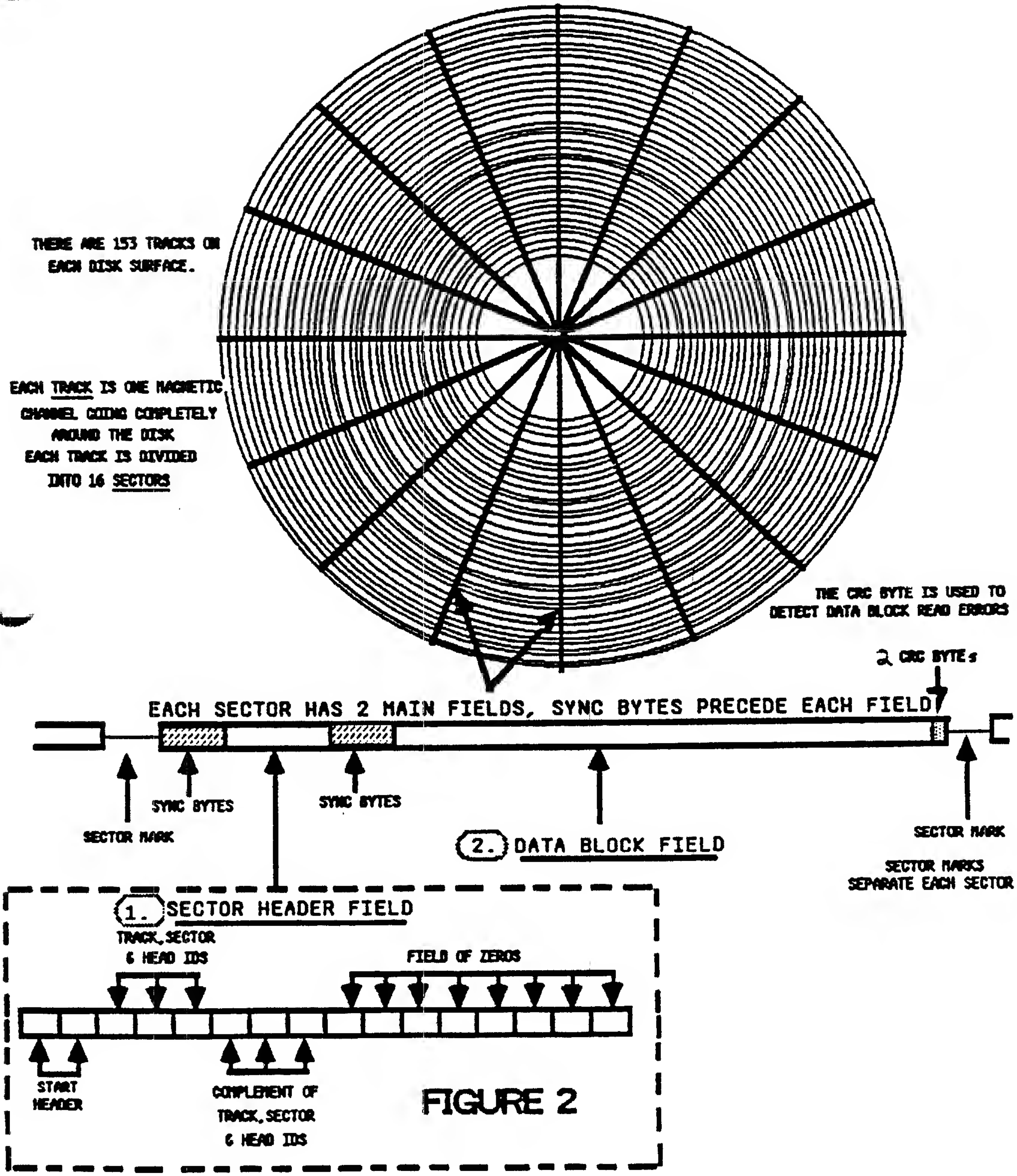



FIGURE 2

## DESCRIPTION OF THE PROFILE HDA FORMAT

Now you know how binary data is written onto and read from the disk. But how does the drive store different sets of data (files) and keep them separate?

To do this, the drive needs a way of writing different files to different areas of the disk, and then finding them when it needs to read them.

To understand how the drive does this, you need to understand **steps, tracks, blocks,** and **sectors.**

Each head is mounted in such a way that it may move in to the center and out to the perimeter of the disk surface as the disk rotates beneath it.

A write or read operation will never take place while the head is moving, but only while the head is stationary and the disk is moving under it.

The heads move in very exact increments called **steps.** On the Pro-File the head must take 153 steps to cover the entire area on the disk where data may be stored. The head may stop after any step to read or write data. The 153 possible positions of the head determine the 153 magnetic channels, or **tracks,** on which data can be stored (refer to figure 1).

The selection of which track the head is positioned over is controlled by the firmware program in the ROM on the Z8 microprocessor on the Controller PCB (the particular firmware routine used for this purpose is called the **Seek Routine** and is discussed in the Firmware Routine descriptions in this section).

The Z8 performs track selection by sending step pulses to the motor controlling the head. The number of step pulses the Z8 sends to the stepper motor determines how far the head will move and so which track it will be over.

**DESCRIPTION OF THE PROFILE HDA FORMAT** (continued)

The firmware program in the Z8 also controls when a read or write operation occurs. When writing, the bit stream to the head travels from the Host (Apple ///, or Lisa), to the Pro-File's electronics, to the head; and when the bit stream is read from the disk it goes back to the Pro-File's electronics, and then to the Host.

There are 612 tracks on the HDA (153 tracks on each disk surface, and 4 disk surfaces), and approximately 8,200 bytes on each track.

If track selection were the only method the Z8 firmware had to control the location of stored data, it would have a maximum of 612 very large storage places (8,200 bytes apiece). Since most files are considerably smaller than 8,200 bytes, this would be very inefficient.

So to make data storage more efficient, the host computer breaks all data up into segments called **data blocks.** If the Host is an Apple /// the data blocks are 512 bytes long, and if the Host is a Lisa they are 532 bytes long.

The Pro-File stores these **blocks** into physically addressable areas on the track called **sectors.** There are sixteen sectors on each track (refer to figure 1), so each track on the Pro-File can hold 16 data blocks.

The sectors are separated from each other by small blank areas of no writing called **sector marks.** The Pro-File uses these sector marks to detect when one sector ends and a new one begins.

Each sector can be divided into 2 fields: the first field is called the **sector header,** the second field follows the sector header and is called the **data block** (see figure 2).

(Continued on the next page.)

## DESCRIPTION OF THE PROFILE HDA FORMAT (continued)

Each field in the sector is preceded by sync bytes to allow the Pro-File electronics to synchronize to the data in the field before attempting to read one.

The sector header field contains 16 bytes: 2 are "start header" bytes; 3 bytes contain track, sector, and head ID's; 3 bytes contain a complement of the track, sector, and head ID information; and the remaining 8 bytes are all 0's.

The data block field consists of the actual data from the Host computer with 2 CRC bytes at the end (a CRC (Cyclic Redundancy Check) byte is used by the Pro-File electronics to detect if an error has occurred during a read or write operation).

The data block field is transparent to the Pro-File (which can only locate sectors), so the operating system from the host computer must keep track of which data block is in which sector.

The operating system references sectors by block numbers. It knows that it has 9728 (decimal), or 0 to 25FF (hexidecimal) sectors available for data on the Pro-File.

So it assigns each block of data to a number from 0 to 25FF called its **logical block number** and writes/reads the data blocks to/from the Pro-File using this number. The Pro-File converts the **logical block number** into sector locations to actually store or read the data block.

During formatting, the Format program writes the sector marks and headers into their areas within each sector. At this time, all sectors are referenced to a physical location on the disk called the Index (see figure ).

The Index position is sensed when a small magnetic tab fastened on the disk motor passes by a magnetic sensor during motor rotation.

Note: The Index signal is only used during formatting, although it may be sampled by the technician with a frequency counter to determine the HDA's motor speed.

(Continued on the next page.)

## DESCRIPTION OF THE PROFILE HDA FORMAT (continued)

In a properly operating Pro-File, sector marks and headers should never change after formatting, since the locations of the sectors will never change. A data block, on the other hand, will change every time its file is written to, by the Host computer system.

When looking at figure  you probably noticed that the sectors are not sequentially numbered. This is because the sectors are **interleaved.** When the Pro-File goes after a sector, it reads sector headers to determine where the head is in relation to the target sector.

Without **sector interleaving** if it read the sector header of the sector immediately preceding the target sector, then the electronics in the Pro-File could not react fast enough to begin reading the data block of the target sector, so it would have to wait another complete revolution of the disk to do so.

With **sector interleaving** the program can read a sector header and know that the next sector in the numerical sequence will always occur a specific number of sectors following it, so it has time to prepare within that same revolution.

**Sector interleaving** is a result of the formatting for a given system. The format in the figure shown is for an Apple /// system. Each sector in this format is offset from the next in its numerical sequence by 5 sectors. The interleaving scheme for a Lisa system offsets the numerical sequence of each sector by 7.

## SPECIAL FUNCTION TRACKS

**Directories:** Now another question: How does the host computer's operating system keep track of where all the blocks belonging to a file are located?

The answer, it uses the Pro-File's HDA to store **directory** information on each file.

Directories are created and maintained by the host computer's operating system. As far as the Pro-File is concerned, they are just data block fields. But without them the operating system would not be able to send the Pro-File the proper block numbers to retrieve the data blocks for a file.

**NOTE:** The following discussion which very briefly describes the Apple /// Sophisticated Operating System's (SOS) directory usage, is for example purposes only, and subject to change as the Sophisticated Operating System is revised.

On an Apple /// system, track 0 on the Pro-File is reserved for the **Root directory** which contains descriptive information about every main file that SOS (the Apple /// operating system) has put on the Pro-File. This information includes:

a. File name - The name of the file in ASCII.

b. The block number for each file's key block - Each files key block contains many items of information about the file. Among them will be a list of every block number in the file.

When an Apple /// host computer wants a file it reads the Root directory which refers it to the files key block (this may be through several subdirectories). The host then reads the key block and sequentially takes each block number from the file's block listing in the key block and sends it to the Pro-File to read the file.

The firmware program in the Z8 takes care of converting the logical block number from the host to a sector address so it can actually acquire the data block. (For more information on the Apple /// directory structure refer to the SOS Reference Manual)

**SPECIAL FUNCTION TRACKS** (continued)

A Lisa uses a different directory structure, but Pro-File operation is still the same.

Because all communication between the Pro-File and the HOST is done block by block, the Pro-File is known as a **block device** (as opposed to **character devices,** which communicate one byte at a time (such as a printer)).

The next block in the file is not necessarily located in the next sequential sector on that track. In fact very often it is located on an entirely different track.

That is why the Pro-File sometimes seems to go through a lot of gyrations as it reads a file. The sectors containing the blocks in the file are probably located on several different disk surfaces and tracks.

Track 77 on all disk surfaces is dedicated for the exclusive use of the Pro-File. The host cannot write to these tracks unless the Pro-File is being formatted. The following discussion describes their usage.

**The Spares Storage Track (Track 77, Disk Surfaces 0, and 1):**
What happens if there is an error?

When the Pro-File looks for a block of data, it performs many tests to confirm that the correct sector is being read accurately (for a more detailed description of these tests, refer to the Firmware Routines description in this section).

Sometimes the Pro-File determines that the media where a sector is located is not useable, and so won't use it any more. A sector identified as being unuseable is called a **spared** sector.

If the data block from the spared sector can be salvaged, the Pro-File will store the data block from the faulty sector on a special track reserved for that purpose called the **Spares Storage Track** (located on track 77 on disk surfaces 0 and 1).

**SPECIAL FUNCTION TRACKS** (continued)

The **Spares Storage Track** provides storage for a maximum of 32 spared sectors (2 surfaces, 1 track on each surface, 16 sectors per track).

**The Spares Table Track (Track 77, on Disk Surfaces 2, and 3):** Once the data block from the spared sector has been stored, the Pro-File will record the old sector location of the salvaged data block along with its new spares storage sector location in the **Spares Table Track** (located on track 77 on disk surfaces 2, and 3).

Spares table information is stored redundantly on the **Spares Table Track** so any addition of a newly spared sector address will require an update to all 32 sectors on both surfaces of this track.

When the host sends the Pro-File a block number to be read, the Z8 will search the **Spares Table** (an image of this table is maintained in RAM), to determine if that block is on the **Spares Storage Track**. If it is, the Z8 will then go to the spares sector address to acquire the data block.

## FIRMWARE ROUTINES

The following descriptions discuss the operation of some of the firmware routines contained in the ROM of the system Z8 on the Controller PCB, and how they affect the operation of the Pro-File.

### 1. SCAN OPERATION

After power up there are several things that take place before the firmware program in the system Z8 microprocessor on the Controller PCB will allow communication with the host computer system.

**Note:** The position of the heads over the disks may be visually monitored by observing the position of the Interruptor arm on the HDA (as shown in Sheet 1 of the troubleshooting flowchart).

a. **First** the power must come up to the proper levels and be stabilized. **Note:** To indicate this process, upon power up, the Ready Lamp will light for between 0.5 and 3 seconds.

b. **Second** the Z8 waits for about 20 seconds to allow the HDA motor to come up to 3600 RPM (its operating speed). **Note:** During this process, the Ready Lamp will remain off.

c. **Third** the Z8 does a Seek routine to the **Spares Table Track** on track 77, on disk surfaces 2, and 3. Seek routine operation is standard for any read, write, or write/verify operation requiring head movement to a new track and is performed as follows.

   During the **Seek** routine the Z8 issues the proper number of steps to the stepper motor to move the head over the target track, and performs a verification process to confirm that the head is over the proper track.

   During the **Seek** verification process the Z8 reads 3 alternate sectors from the track the heads are over.

(Continued on the next page.)

1. **SCAN OPERATION** (continued)

The sector header fields from these sectors tell the Z8 which head and track have actually been selected. A CRC check is also performed on the data block fields from these 3 sectors.

(a) If the head and track ID's read from the 3 sector header fields prove that the proper head is positioned over the proper track, and the 3 data block field's CRC status is OK, then the Z8 will exit the Seek routine and enter the **Read** routine.

The **Read** routine would normally read every sector on the now confirmed track until the target sector is read. However since each sector on the spares table track is redundant (each sector contains the duplicate copies of the spares table), there is no target sector.

Any sector that has a good CRC check during read is acceptable. If the first sector has a CRC error, then the Z8 will just read the next and so on until it finds a good one.

(b)* If during the attempt to confirm a good **Seek** to the **Spares Table Track** on track 77, a sector header is unable to be read, or a CRC error in a sectors data block field occurs, then the **Seek** routine will continue reading the 3 alternate sectors for up to 64 errors.

* If over 64 errors occur, then the Z8 moves the head to track 0 (the outermost track) and trys the **Seek** routine to the target track again (in this case track 77). If that fails the Z8 will move the head in to track 155 (the innermost track) and again reseek to the target track.

* The head movement to track 0 and track 155 and reseeking process during **Seek** verification is performed twice.

If the proper track is still not found, then the **Seek** routine will be exited, **Scan** operation is abandoned, and the heads are moved back to park position.

(Continued on the next page.)

1. **SCAN OPERATION** (continued)

**d. Fourth** the firmware program in the Z8 performs a sector header read, and data block CRC check of every sector on the HDA beginning with track 0 as follows: **Note:** The Ready Lamp will flash on and off during this process.

(1) Each movement of the heads to a new track requires a **Seek** routine as described above.

(a) If the head and track ID's read from the 3 sectors during the **Seek** routine prove that the proper head is positioned over the proper track, and their CRC status is OK, then the Z8 will exit the **Seek** routine and enter the **Read** routine.

The **Read** routine will read each sector header on the track until it finds one that matches the target sector whose sector address is currently in RAM.

* If during the **Read** routine the correct header is found, then the data block is read and its CRC status is checked. If the data blocks CRC status checks good, then the Scan operation goes on to the next sector to be read.

* If during the **Read** routine there is a timeout error (the target header cannot be found within 150 ms), or a CRC error occurs in the target sectors data block field, then the <u>**Retry**</u> routine (described in section 2) is called to attempt to get a good data block read from the sector.

(b) At this point in **Scan** operation, if an error occurs the **Seek** error recovery procedure described above will be followed, <u>with the following exception.</u>

If after the procedure is accomplished the proper track is still not found, then the Z8 will use the last track it could confirm a good seek on, as a reference to approximate the position of the target track, and move the head to that position. Then regardless of whether it could confirm a good seek to the target track or not, it will exit the **Seek** routine and enter the Read routine to read the target sector.

## 2. RETRY ROUTINE

The **Retry** routine is called for the purpose of attempting to read a good data block field after an unsuccessful read operation has occurred.

There are 2 variables in the **Retry** routine, the retry number, and the sparing threshold. These values are given by the host computer's operating system when communications between it and the Pro-File are initiated.

During the Scan operation since no communication from a host can occur, default values of 105 for the retry variable, and 31 for the sparing threshold are used. When called the **Retry** routine will:

a. Read the target sector the number of times specified by the retry variable (in the Scans case the default value is 105)

(1) If after the total number of retrys have occurred, there are no successful reads, the **Retry** routine will try to reread the sector 90 more times, or until it reads a data block without a CRC error.

(a) If all of the 90 reads are unsuccessful, then the sector address is written to the bad block table in RAM, and the spares table track (track 77 of disk surfaces 2 and 3).

**Note:** If **Retry** is called during Scan operation, the spares table track (track 77 on disk surfaces 2 or 3) will be updated when the host computer's operating system initiates communication with the Pro-File (this will be after the completion of Scan).

(b) If any of the 90 reads are successful a good data block from one of the successful reads is held in RAM while the **Diagnostic** routine (described later) is called to check out the media for the sector in question.
If the **Diagnostic** routine determines that the sector has bad media, it will spare the sector.
If the **Diagnostic** determines the sector to be good, then the **Diagnostic** and **Retry** routines are exitted.

2. **RETRY ROUTINE** (continued)

(2) If after the total number of retrys have occurred, there were successful reads, then the Z8 checks to see if there were more unsuccessful reads than the spares threshold variable allows (in Scans case the default is 31).

(a) If the sparing threshold has not been exceeded then the **Retry** routine is exitted, and control is given back to the **Scan** operation.

(b) If the sparing threshold is exceeded, but at least 1 good data block read occurred, then the data block field is rewritten to the questionable sector and the **Diagnostic** routine (described later) is called to check out the target sectors media.

If the **Diagnostic** routine determines that the sector has bad media, it will spare the sector. If the **Diagnostic** determines the sector to be good, then the **Diagnostic** routine is exitted and control is given back to the **Scan** operation.

### 3. DIAGNOSTIC ROUTINE

The **Diagnostic** routine is called for the purpose of checking media quality on a given sector location, and sparing the sector if the media quality is determined to be bad. When the **Diagnostic** routine is called it will:

a. Read the target sector (specified by the sector address currently in RAM), 100 times.

(1) If over 30 CRC and/or timeout errors occur, then the **Diagnostic** routine will write the data block into a sector on the spares storage track (track 77 of heads 0 or 1).

The **Diagnostic** routine will then write the old sector address, and its new spares track sector address in the spares table in RAM, and after the next handshake with the host system will update the spares table track (track 77 on heads 2 or 3).

The **Diagnostic** routine is then performed on the new spare sector location of the data block to make sure that it is a good media location.

**Note:** During Scan operation the spares table track (track 77 on disk surfaces 2 or 3) will be updated when the host computer's operating system initiates communication with the Pro-File (this will be after the completion of Scan).

(2) If less than 30 CRC or timeout errors occur, then the **Diagnostic** routine is exitted, leaving the data block in its present sector (the media must be OK).

4. **<u>During Normal Operation</u>** - the **Seek** and **Read** routines will be performed just as they were in the Scan operation.

If an error occurs, the sequence of operations is the same as that of scan with the exception that the retry and spares threshold variables will be different depending upon the operating system.

The **Diagnostic** routine will always be called if the verify fails during a Write/Verify operation.

If a sector address is in the Bad Block table, then that means that a Retry routine must have been called for that sector, and during the routine there was never a good read of the data block.

This means that the Pro-File does not have a good data block for that sector and can't perform a **Diagnostic** on the questionable sector location until it has one.

If the host does a write to that sector address listed in the Bad Block table, then at that time the Pro-File has a good data block for that sector so then the Diagnostic routine is automatically called to verify the media at that location.

Of course if it doesn't check out then the sector is spared. In any event, whether the sector is spared, or is determined to be good and left as is, the sector's address will be deleted from the Bad Block table because the Pro-File now knows whether its media is good or not.

# CONTROLLER PCB CIRCUIT DESCRIPTION

**What's in This Description**

On the next six pages you will find tables listing the pins and their functions for the:

a. Host interface plug P1.

b. Analog PCB interface plug P2.

c. Z8 Main Processing Unit on the Controller PCB.

Block diagram and circuit descriptions for the main functions on the Controller PCB follow these tables.

For specific circuit diagram information refer to the Controller PCB schematic at the end of this section.

**Controller PCB to Host Interface (P1)**
The Controller PCB and the Host communicate via a 25 pin plug, **P1**. Signals at P1 on the Controller PCB are as follows:

| **PIN** | **SIGNAL** | **DESCRIPTION** |
|---|---|---|
| 5, 6, 8, 11 12, 13 22, 23 | XD0-XD7 | (bidirectional) /Data lines between the Host and the Pro-File. |
| 3 | RRW | (input) /Controls the direction of data on lines XD0-XD7. |
| 17 | CMD | (input) /Initiates communication with the Pro-File. |
| 16 | BSY/INT | (output) /Notifies the Host of Pro-File status. |
| 15 | PSTRB | (input) /When writing, this signal is generated by the Host to clock a byte into Pro-File's RAM; when reading, the pulse causes the Z8 to increment the Address Counters and so select the next sequential address to be read. During Read, the RAM is always selected to output the contents of the selected address; so after the Host generates PSTRB, it waits a short time and then gates in the byte from the I/O cable. |
| 18 | TPARITY | (output) /This signal is high or low, depending on the parity of the byte currently being transferred on data lines XD0-XD7. |
| 21 | CRES | (input) /When generated by the Host, this signal resets the Z8 to its initial state. This usually occurs at the beginning of communications, but whenever it happens depends on the Host. |
| 25 | CDET | This signal is used by Host interface to detect a disconnected or broken cable. |
| 1 | PH0 | (input) /PH0 is a timing signal from the Host. |

**Controller PCB to Analog PCB Interface (P2)**
The Controller PCB and the Analog PCB communicate via **P2**. The Analog PCB converts the Controller PCB's digital data into analog signals for the disk media. Signals at P2 on the Controller PCB are as follows:

| PIN | SIGNAL | DESCRIPTION |
|---|---|---|
| 12 | **Write Data** | (output) /NRZ serial data to be written on the disk. |
| 32 | **Read Data** | (input) /Digitized NRZ serial data recovered from the disk. |
| 10 | **Sys Clock** | (output) /Provides the 10 MHz system clock to the Analog PCB for write operations. |
| 34 | **Read Clock** | (input) / Provides the Controller PCB with a clock that is in sync with the Read data. |
| 30 | **Read Gate** | (output) /Enables the Read circuitry on the Analog PCB. |
| 22 | **Write Gate** | (output) /Enables the write circuitry on the Analog PCB. |
| 4 | **Index** | (input) /Index is a pulse that occurs once per disk revolution and is only used by the Z8 during formatting. |
| 8 | **Write Sector Mark** | (output) /Enables the Analog PCB to write DC sector boundaries during formatting. |
| 15 | **Sector Mark** | (input) /Signals the Controller PCB when the heads have encountered a sector mark on the disk. |
| 26, 28 | **Head Select 1,0** | (output) /Causes selection of one of four Read/Write heads. |
| 2 | **Track 0** | (input) /Indicates that the heads are positioned over the outermost tracks. |
| 24 | **Precompensation** | (output) /Enables the Precompensation and low current circuitry on the Analog PCB when the inner tracks (128 to 152) are being written to. |
| 14, 16, 20, 18 | **Stepper Phases** | (output) /Activates stepper motor coils to position heads. Generated by the Z8. |

## Z8 Main Processor Pin Descriptions

The following are signal descriptions produced from the Z8 on the Controller PCB. The Z8 has five sets of pins:

1. General purpose signals.
2. Port 0.
3. Port 1.
4. Port 2.
5. Port 3.

### 1. General Purpose Signals

| PIN | SIGNAL | DESCRIPTION |
|---|---|---|
| 2, 3 | Clock | 5 MHZ |
| 6 | Reset | 'Power OK'; system reset line or $\overline{CRES}$. |
| 9 | $\overline{AS}$ | Address strobe, used to latch data from Port 1 and Port 0 [0:3] into LS161 counters (RAM address counters). |
| 8 | $\overline{DS}$ | Data strobe, defines data valid time during Writes or Reads to RAM and writes to 8253 counter. |
| 7 | $ZR\overline{W}$ | Z8 Read/Write line. Defines external memory for I/O operation as a Read or Write. |

**NOTE:** $\overline{AS}$, $\overline{DS}$, and $\overline{Z}RW$ are tri-stated when Port 1 is placed in the high impedance state.

### 2. PORT 0

| PIN | SIGNAL | DESCRIPTION |
|---|---|---|
| 13,14<br>15 | P00-P02<br>A8-A10 | High-order address bits, A8-A10, for RAM access. They are latched into the LS161 address counter during AS. |
| 16 | P03<br>PCOMP | Precomp/Reduce Write Current command to disk Write electronics. (State is 'don't care' if not writing.) |
| 17,18<br>19,20 | P04-P07<br>01-04 | 0B2, 0B1, 0A2, and 0A1 commands, respectively, to the stepper motor drive circuitry. |

### 3. PORT 1

System data bus (8 bits). Its different functions are listed below.

| PIN | SIGNAL | DESCRIPTION |
|---|---|---|
| 21thru 28 | P10-P17 ZR7-ZR0 | a. Low order address bits and data, multiplexed by AS and DS, for Z8 RAM accesses.<br><br>b. Data bits for loading the 8253 counters. (LDCTR, derived from DS when MSEL1 is low, is the 'Write' input to the 8253.)<br><br>c. Data to 1 from the Host. The Z8 program must set Port 1 to the high impedance state.<br><br>d. Data to 1 from the disk. The Z8 program sets Port 1 to hi-Z. |

### 4. PORT 2

These pins are programmed as inputs or outputs using a Z8 mode register. All pins are set to hi-Z (input mode) after a reset.

| PIN | SIGNAL | DESCRIPTION |
|---|---|---|
| 31 | P20 WRTSM | Write Sector Mark (WRTSM) output. This signal, used in conjunction with Format Enable (FMTEN), which causes WTGT to be true, writes sector marks on the disk. This should happen only during the format operation. |
| 32 | P21 TRKO | Track 0 (TRKO) input. Indicates that R/W heads are positioned over outermost track. |
| 33 | P22 CMD | Command (CMD) input. This line is set true by the Host via the interface card, and it indicates that the Host is requesting access to the controller RAM. The corresponding handshake line, BSY/INT, is a Z8 output described later. |
| 34 | P23 BSY/INT | Busy/Interrupt (BSY/INT). This signal acknowledges the CMD input via the CMD-BSY protocol described elsewhere. BSY can also be used to interrupt the Host if enabled on the Interface card. |

(Continued on the next page.)

**(Port 2 pin description is continued from the previous page.)**

| | | |
|---|---|---|
| **35** | **P24**<br>**MSELO** | (MSELO) The low order select bit to control RAM access. |
| **36** | **P25**<br>**MSEL1** | (MSEL1/PSEL) High order RAM access select bit. Also controls data input to RAM from the Host or the disk; hi = disk, low = Host. |
| **37** | **P26**<br>**START/**<br>**RSTERR** | Start/reset error (START/RSTERR). Enables Read/Write control hardware to begin a Read or Write operation at the next sector pulse. Also resets the CRC error flip-flop and the sector timing register. |
| **38** | **P27**<br>**DRW** | Disk Read/Write (DRW). Controls the Read/Write inputs to the RAM for Host or disk accesses. Command input to Read/Write hardware. High when Read, low when Write |

## 5. PORT 3

P33-P30 are inputs and/or interrupts; P37-P34 are outputs.

| PIN | SIGNAL | DESCRIPTION |
|---|---|---|
| **5** | **P30**<br>**SER IN** | Not currently used. |
| **39** | **P31**<br>**SECTOR** | This signal is generated on the Analog PCB whenever it detects a Sector Mark on the disk. |
| 12 | **P32**<br>**SECTDN** | Sector Done (SECTDN). (Input) Resets the 8253 byte counters and the lower four bits of the RAM address counter when the Read/Write hardware is searching for the target sector. Goes low when the Read/Write operation has been completed. Stays low until START. |

**(Continued on the next page.)**

**(Port 3 pin description is continued from the previous page.)**

| | | |
|---|---|---|
| **30** | **P33 CRCERR** | CRC Error (CRCERR). (Input) Goes low if a CRC error is detected during a disk Read. |
| **29,10** | **P34,P35 HS0,HS1** | Head Select 0, 1 (HS0, HS1). Binary coded bits to select head 0, 1, 2, or 3. |
| **40** | **P36 WRTSM** | Write Sector Mark (WRTSM). (Output) Causes sector marks to be written on the disk if FMTEN is high and the Format jumper is installed. |
| **4** | **P37 RDHDR/TX** | Read Header/Transmit (RDHDR/TX). Command input to the Read/Write control circuits. If DRW (P27) is high and START/RSTERR (P26) is low, RHDHR hi will cause the leader field on the next sector to be stored in RAM. |

**Principles of Operation**
Upon power up, the Z8 issues phase steps to the Head Stepper motor on the HDA to move the heads to track 77. The Z8 then performs a Read operation to read the Spares table. If this is successful, the firmware in the Z8 will perform the Scan sequence.

(For a more detailed explanation of what the firmware in the Z8 is doing (i.e., Scan, Seek, etc.), or information on the format used for the Pro-File HDA (i.e., Spares Table, sector header composition, etc.), refer to the Appendices section of this manual.)

The power up reading of the Spares Table and the performance of the Scan sequence are basically composed of Check Header and Read operations. These operations are discussed later.

Once the Scan is completed and the initial (operating system specific) handshake has taken place, the Pro-File remains idle until the Host requests an operation. All Host-requested operations in the Pro-File are performed in three steps: the Command Handshake, the Check Header function, and the Operation.

1. **The Command Handshake** - The Host sends command bytes to the Pro-File to tell it whether to perform a Read, Write, or Write/Verify operation, and on what logical block number to perform it.

   The Z8 on the Controller PCB converts the logical block to location bytes (i.e., physical location on the disk; target head, track, and sector) and stores them in RAM.

   The Command Handshake is the same for any of the three operations. (Read, Write, or Write/Verify).

**(Continued on the following page.)**

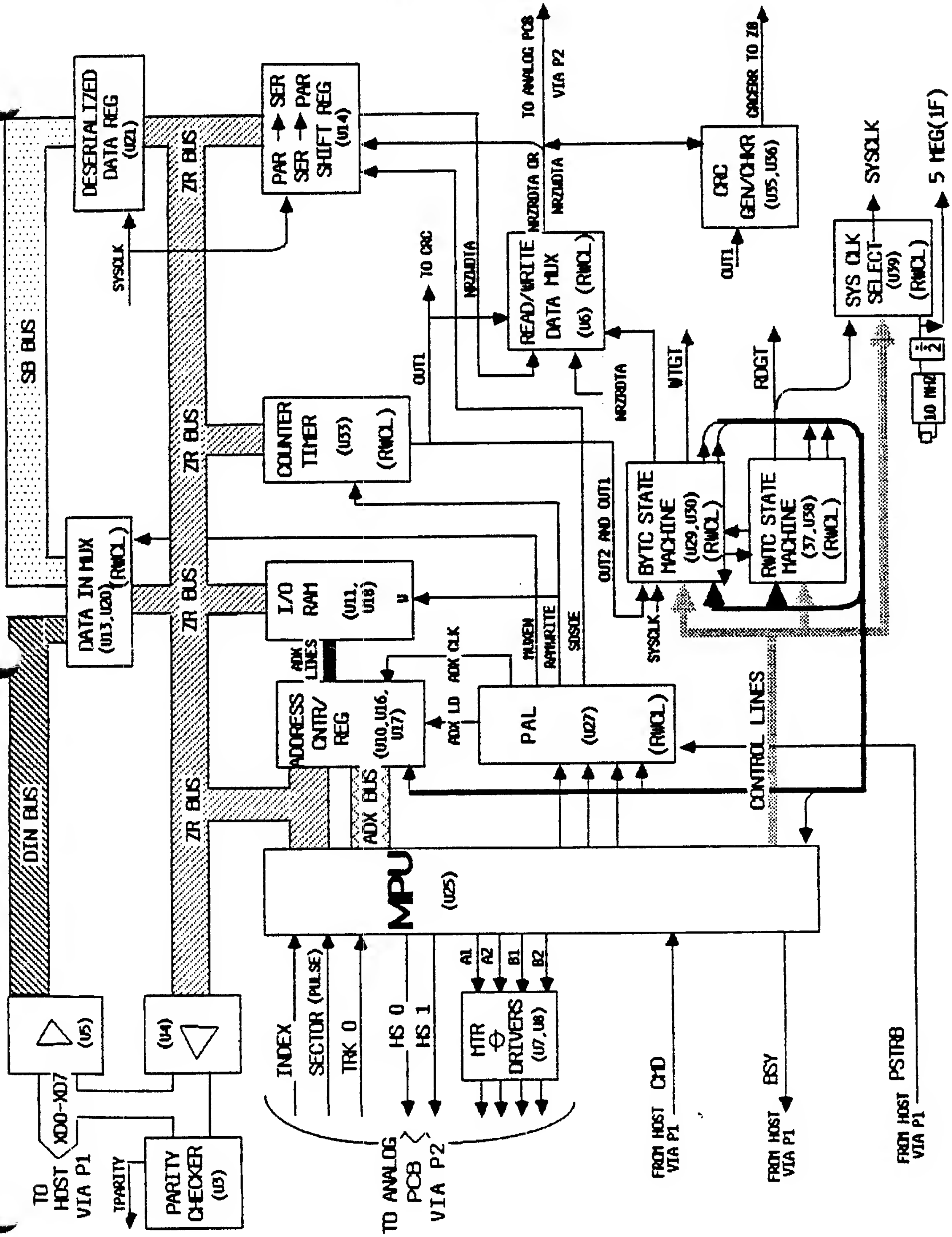
2. **The Check Header Function** - If the target sector is on a different head or track from the one already selected, the Z8 will perform the Seek routine to move all 4 heads to the target track (the track containing the target sector) and will enable the target head (the head over the disk surface containing the target track and sector).

   The Seek routine then uses the Check Header function to read three consecutive sector headers from the track it has moved the head to, and compares them with the target head, track, and sector bytes in RAM.

   The process used in the Check Header function to read the sector headers (to confirm a Seek to the right track) is almost identical to the first part of the Read, Write, and Write/Verify operations, which also read sector headers to find their target sectors.

3. **The Operation** - Once a successful Seek is confirmed, the Z8 coordinates the circuitry in the Controller PCB and Analog PCB to perform it. Each operation follows a different sequence of events.

# CONTROLLER PCB BLOCK DIAGRAM



## CONTROLLER PCB DETAILED BLOCK DIAGRAMS

The following is a brief description of each of the 17 functional elements on the Controller PCB. Understanding the functions of these elements will help you to understand the signal flow discussions later.

**For more specific circuit diagram information refer to the Controller PCB schematic at the end of this section.**

**Z8 Main Processing Unit U25**
The Controller PCB's MPU is a Z8 microprocessor, which has a self-contained ROM program. It provides an intelligent interface to the Host computer. It indirectly controls the Pro-File's electronics by setting modes and directly controls the stepper motor and head selection.

**PAL U27**
This single chip is a logic array specifically programmed for this application. It performs complex and/or combinational logic functions. Primarily, it controls the function of the address counter, the direction of data to/from RAM, loading the counter/timer, and the serial/deserial register.

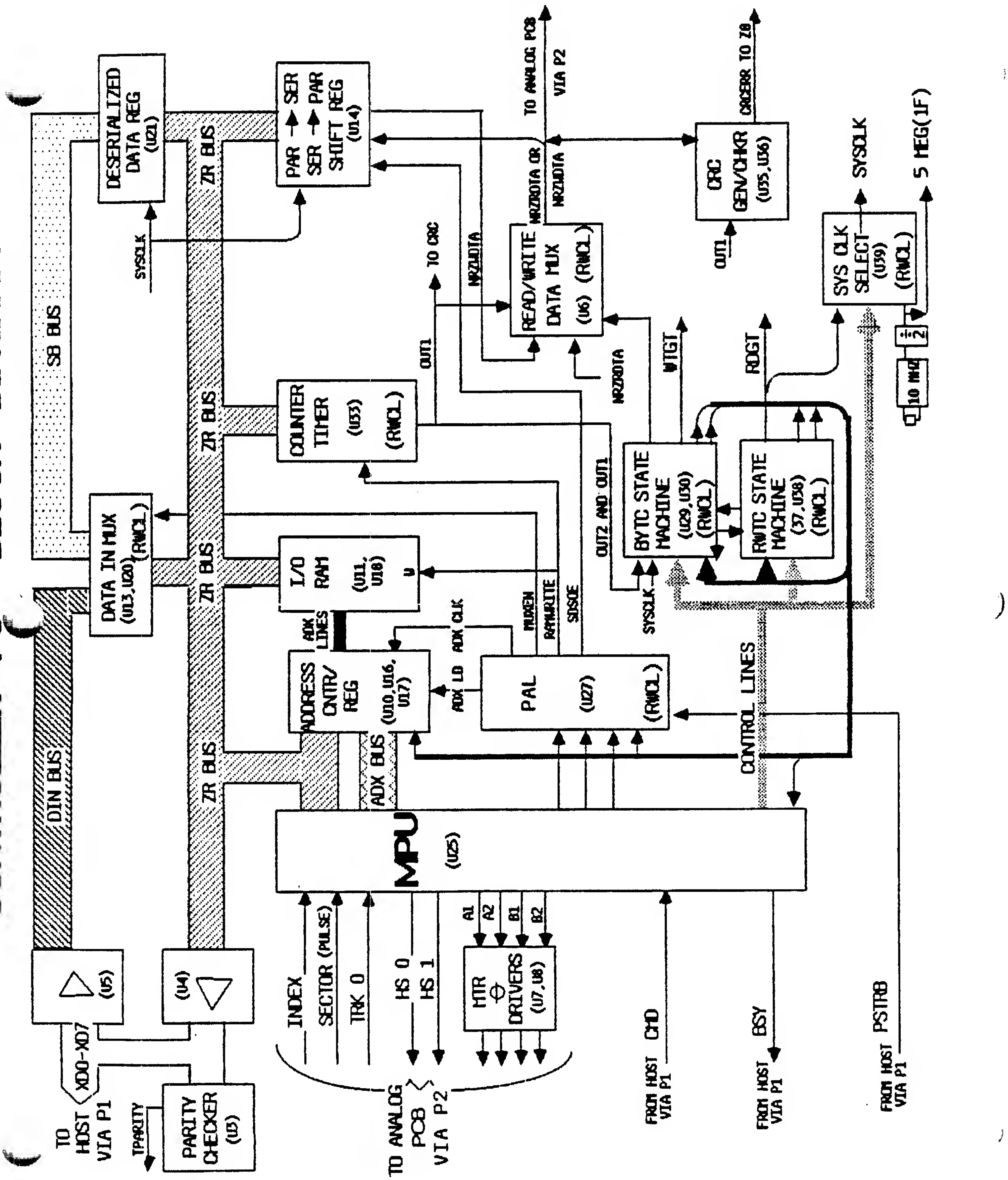
**RAM Address Counter/Register U10, U16, U17**
The method of use depends on what operation is currently going on. This element can be preset to a certain point and counted up through a sequential range of addresses for RAM access. It is also used as an Address register where it is loaded with a value for a specific single access.

**RAM U11, U18**
The RAM is a two kilobyte RAM array used to hold data to and from the Host and disk. Various locations are used to hold status information and the current spares tables.

**Data Line Drivers U4, U5**
These simple Line Drivers drive data to and from the Controller and Host interface PCBs.

**Data In MUX U13, U20**
This MUX is used to direct data coming in from the Host interface PCB or from the disk. The usual destination of its outputs is the RAM.

CONTROLLER PCB BLOCK DIAGRAM



**Bus Parity Checker U3**
The BPC forms the other half of the ;s parity checking circuit on the Host interface PCB. It constantly monitors the bus, checks the parity at the Controller end, and sends its sum to the Host interface to be compared with the sum on the interface end. A parity error should not occur unless a cable fault exists.

**BYTC State Machine U29, U30**
The BYTC (Byte Control) element of the State Machine, one of the two major elements of the Read/Write Control circuitry, steps through the control states for each part of an operation at a bit-time rate.

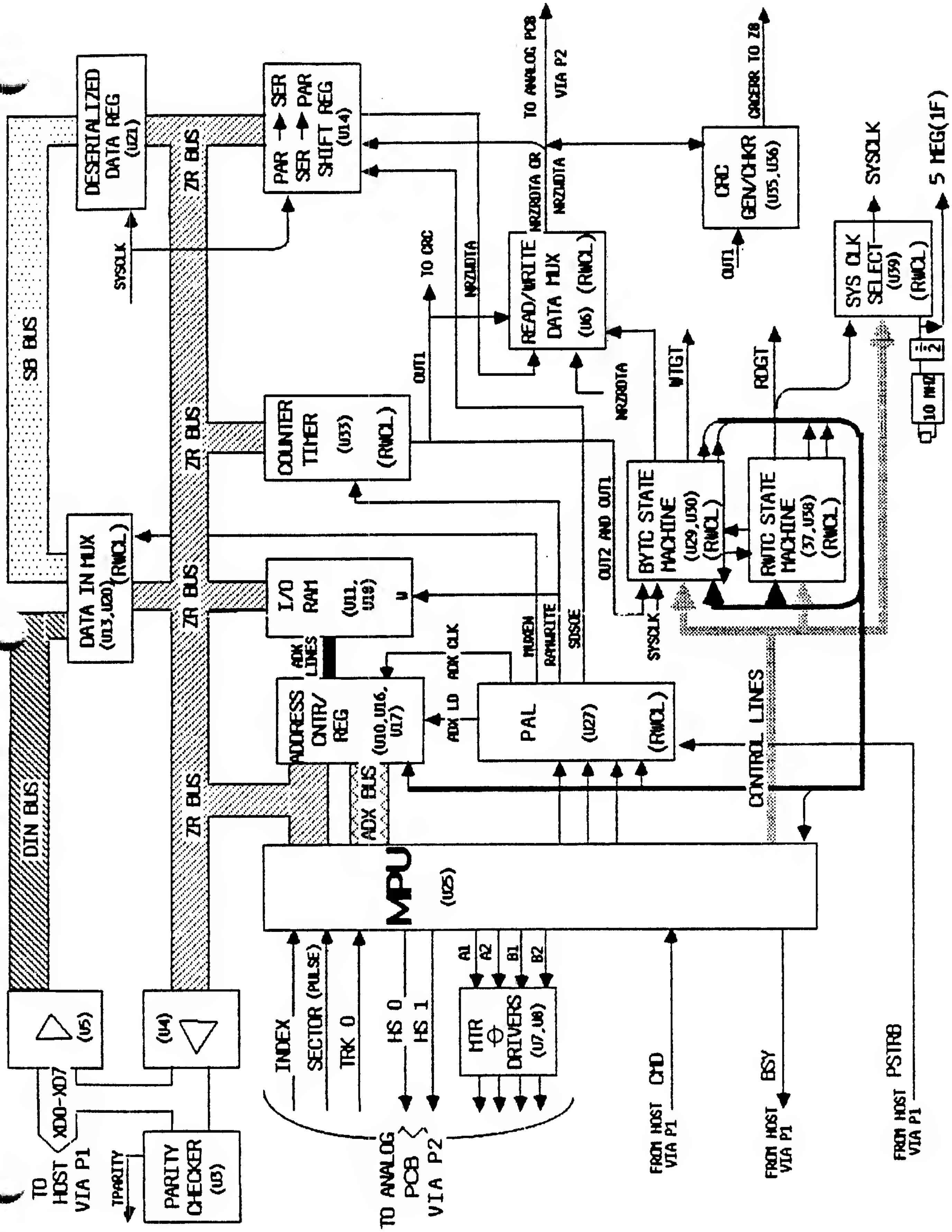
**RWTC State Machine U37, U38**
The RWTC (Read Write Timing Control) element of the State Machine, the second major element of the Read/Write Control, steps through the control states necessary to control the timing for all the operations associated with block/sector reading and writing.

**System Clock Selector U31, U32, U39**
The SSC switches from the crystal oscillator, used during idle and Write operations, to the Read clock generated by the Analog PCB during the Read operation. This keeps the logic in sync with the data.

**Divide-by-8 Counter**
Counts the system bit-clocks that the System Clock Selector has selected (either the clocks from the Controller PCB's crystal oscillator or RDCLKs from the Analog PCB) and produces a positive transition from its QC output for every eight bit-clocks received (one per byte). Its QB and QA outputs enable the State Machine to discriminate phase (bit times) within the processing of a byte.

**Programmable Counter/Timer U33**
This chip receives the QC output of the Divide-by-8 Counter as its input clock. It contains three programmable counters, which yield byte-time information to the Read Write Control logic, and it basically keeps track of what part of the particular sector is being processed by the Controller PCB.

# CONTROLLER PCB BLOCK DIAGRAM



**Read/Write Data MUX U6**
The Read Data MUX is used to select one of two sources of data, either Serialized Data from the SER/DESER register, or NRZ Read Data from the Analog PCB. When reading, it gates NRZ Read Data through to the Serial/Deserial Shift Register U14. During a Write, it gates serial data from the Serial/Deserial Shift Register U14, to the CRC generator U35.

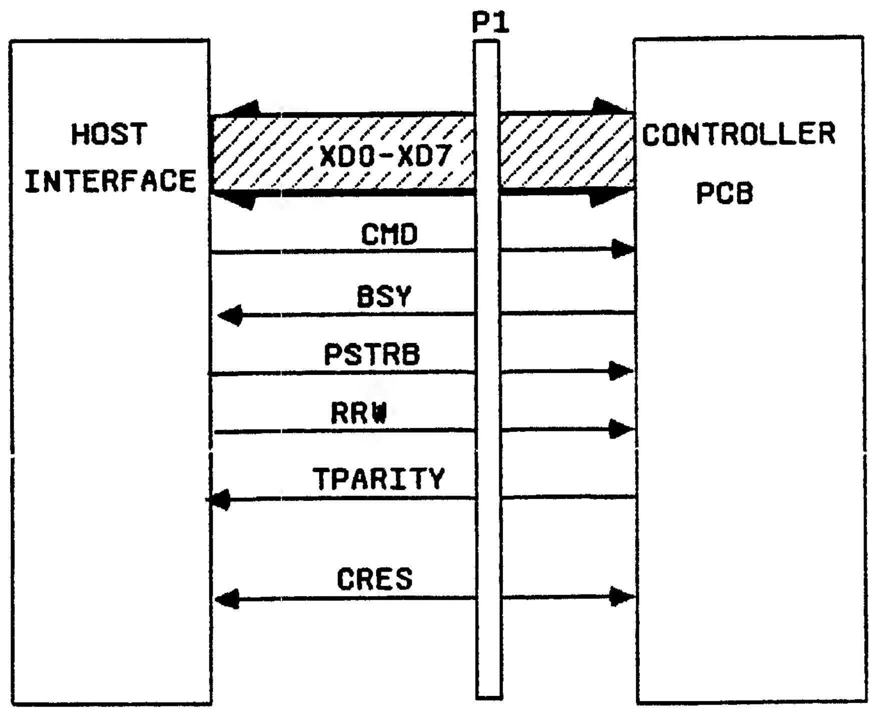
**CRC Generator/Checker U35, U36**
The CRC (Cyclic Redundancy Check) circuit is used to compute CRC check characters that are written at the end of each data block on disk during Write operations, to compute CRC for Read data, and to compare the result with the CRC characters that were read at the end of each data block

**Deserialized Data Register U21**
This 8-bit register temporarily holds the deserialized data from the disk so that the shift register can receive the next byte. When the logic is ready, it directs the register's contents to RAM though the Data In MUX.

**Serial/Deserial Shift Register U14**
This register is used to take the parallel data from RAM and shift it out serially to the Analog PCB and to take the serial data from disk and shift it into a parallel format for transfer back into RAM.

**Stepper Motor Drivers U7, U8**
The 4 phases required for Stepper motor movement are generated by the Z8. The current for these signals is then boosted by the Stepper Motor Drivers U7, and U8.

# PRO-FILE HOST INTERFACE



## CONTROLLER PCB SIGNAL FLOW DESCRIPTION

To understand Controller PCB operation, you should first become familiar with data flow in the three stages of an operation; the Command Handshake, the Check Header function, and the operation itself. The following discussions describe each stage, first in general and then in detail.

The Z8 is used to condition the logic, but it is not actively involved with data transfers to/from the disk or Host; that is done by the Read/Write Control logic (RWCL which is just about everything else on the Controller PCB except the Z8, RAM, and Host interface circuitry).

(For information on the Pro-File format on composition of the sectors in the format, refer to the Pro-File HDA Description in the Appendices section.)

### A. Command Handshake

**Command Handshake General Explanation**
Assume that the Pro-File is initially sitting idle with the BSY line high (not active), the disks spinning, and the heads over track 155 (Park position), waiting for the Host to tell it to do something. The Host communicates this message during the Command Handshake.

The Host asserts CMD (active low) to initiate communications with the Z8. Upon seeing CMD going low, the Z8 lowers its BSY line and waits for the Host to raise CMD.

When the Pro-File sees CMD go high it places a 01 response byte on the interface bus and raises BSY.

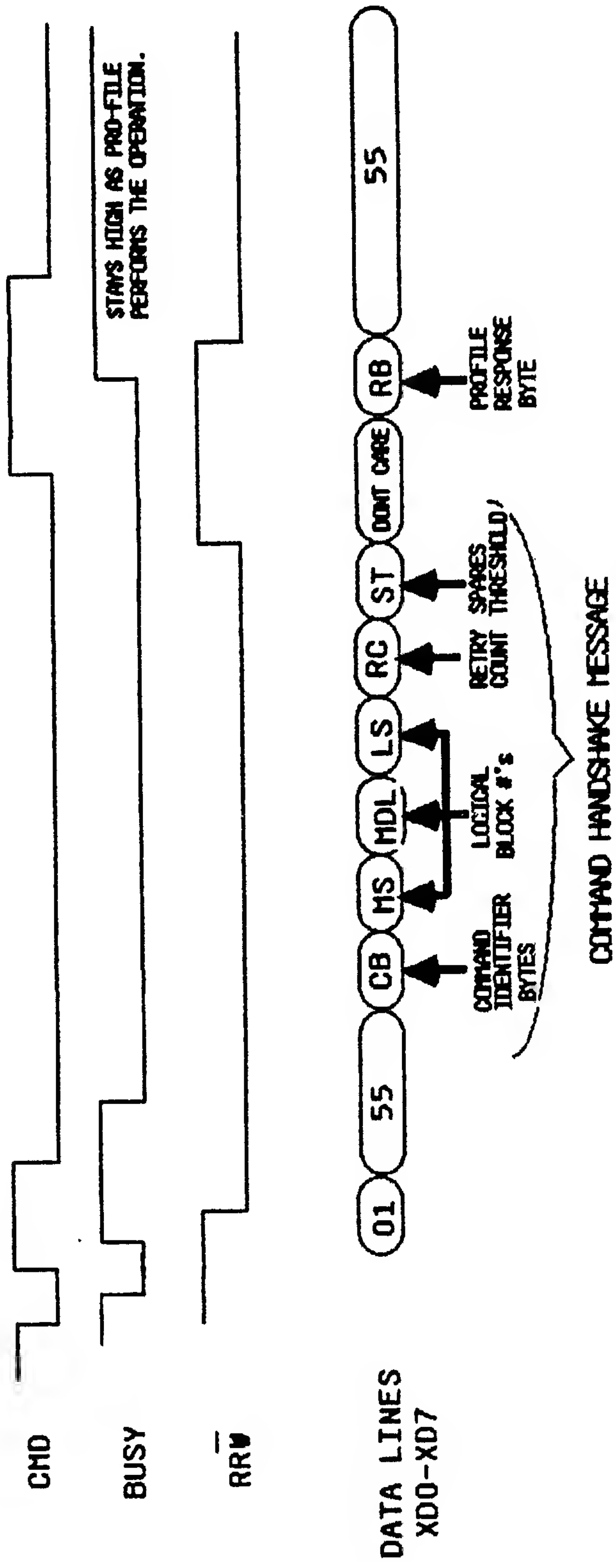
The Host sees the BSY line go high and interprets the 01 as an ACK, so it lowers the RRW signal. The low RRW signal enables the Pro-File to write the command bytes the Host will send into its RAM.

The Host must acknowledge the Pro-File's response with a 55, or the Z8 will abort the operation and go back to idle. The Host puts its 55 response byte on the bus and lowers the CMD line.

The low RRW and the response of 55 cause the Z8 to condition the bus to receive the command bytes, which are not immediately read by the Z8 but are stored in RAM for future reference.

After the Host puts each byte on the I/O bus, it generates PSTRB. The positive transition of the negative pulse PSTRB is used to clock the byte into the RAM.

# COMMAND HANDSHAKE TIMING



When CMD goes low again, the Z8 interprets the command bytes and responds with the result of its command interpretation. For example, if the Host has said to read a block, the Z8 would respond with "02", which means "I'm going to read a block".

If it wants the operation to continue, the Host must confirm the response with a 55 on the bus again. If it disagrees or has changed its mind, the Host will send a byte other than a 55 causing the Pro-File to abort the operations.

Two handshakes are required to complete a Read operation. The first one is the Command Handshake, and the second is when the Pro-File sends the Read data, and the completion status of the operation back to the Host.

Three are required for both a Write and a Write/Verify operation. The first one is the Command Handshake, and the second is when the Host sends the block of write data to the Pro-File, and the third is when the Pro-File sends the completion status of the operation back to the Host.

The command identifier bytes for each of the three commands are as follows, 00 fro Read, 01 for Write, and 02 for Write/Verify. A Command Handshake message is composed of the following elements.

| Command Identifier | Logical Block # | Retry Count | Sparing Threshold |
|---|---|---|---|
| XX | Most, Middle, and Least Significant | Host Specific | Host Specific |

The Pro-File interprets CMD high as a request from the Host to send a byte telling the Host what the Pro-File expects to do next. When the Pro-File is waiting for a command, it sends an '01' in response to CMD high. The Pro-File's other responses are shown in the table below.

| Host's command to Pro-File | Pro-File's Response |
|---|---|
| Initiate handshake (lowers CMD) | 01 |
| Read a block | 02 |
| Receive Write data | 03 |
| Receive Write/Verify data | 04 |
| Do the Write or W/V on disk | 06 |

Following a Read or a Write, the Z8 provides the Host with four status bytes, which are placed in the buffer immediately preceding the data just read or written. The significance of the individual bits is listed below:

**STATUS 1**

7 = 1 if Pro-File received 55 to its last response

6 = 1 if Write or Write/Verify was aborted because the number of data bytes sent exceeded the data block limits or because the Pro-File couldn't read its spares table

5 = 1 if the Host's data is no longer in RAM because the Pro-File updated its spares table.

4 = 1 if SEEK ERROR - caused by Pro-File being unable in three tries to read three consecutive headers on a track

3 = 1 if CRC error, may occur only during an actual Read or verify of Write/Verify, not while trying to read headers after seeking

2 = 1 if TIMEOUT ERROR (couldn't find target sector's header in nine revolutions - Not set while trying to read headers after seeking)

1 = N.C.

0 = 1 if operation is unsuccessful

**STATUS 2**

7 = 1 if SEEK ERROR - occurs if Pro-File is unable in one try to read three consecutive headers on a track.

6 = 1 if spares table overflow (More 32 sectors spared)

5 = N.C.

4 = 1 if bad block table overflow occurs (Less than 100 bad blocks in table )

3 = 1 if the Pro-File is unable to read its status sector.

2 = 1 if sparing occurs.

1 = 1 if Seek to wrong track occurs.

0 = Not used.

**STATUS 3**

| | | | |
|---|---|---|---|
| | 7 | = | 1 if the Pro-File has been reset |
| | 6 | = | 1 if block number is invalid |
| * | 5 | = | 1 if block I.D. at end of sector is mismatched |
| | 4 | = | N.C. |
| | 3 | = | N.C. |
| * | 2 | = | 1 if the Pro-File has been reset. |
| * | 1 | = | 1 if the Pro-File gave a bad response |
| * | 0 | = | 1 if CRC error occurs. |

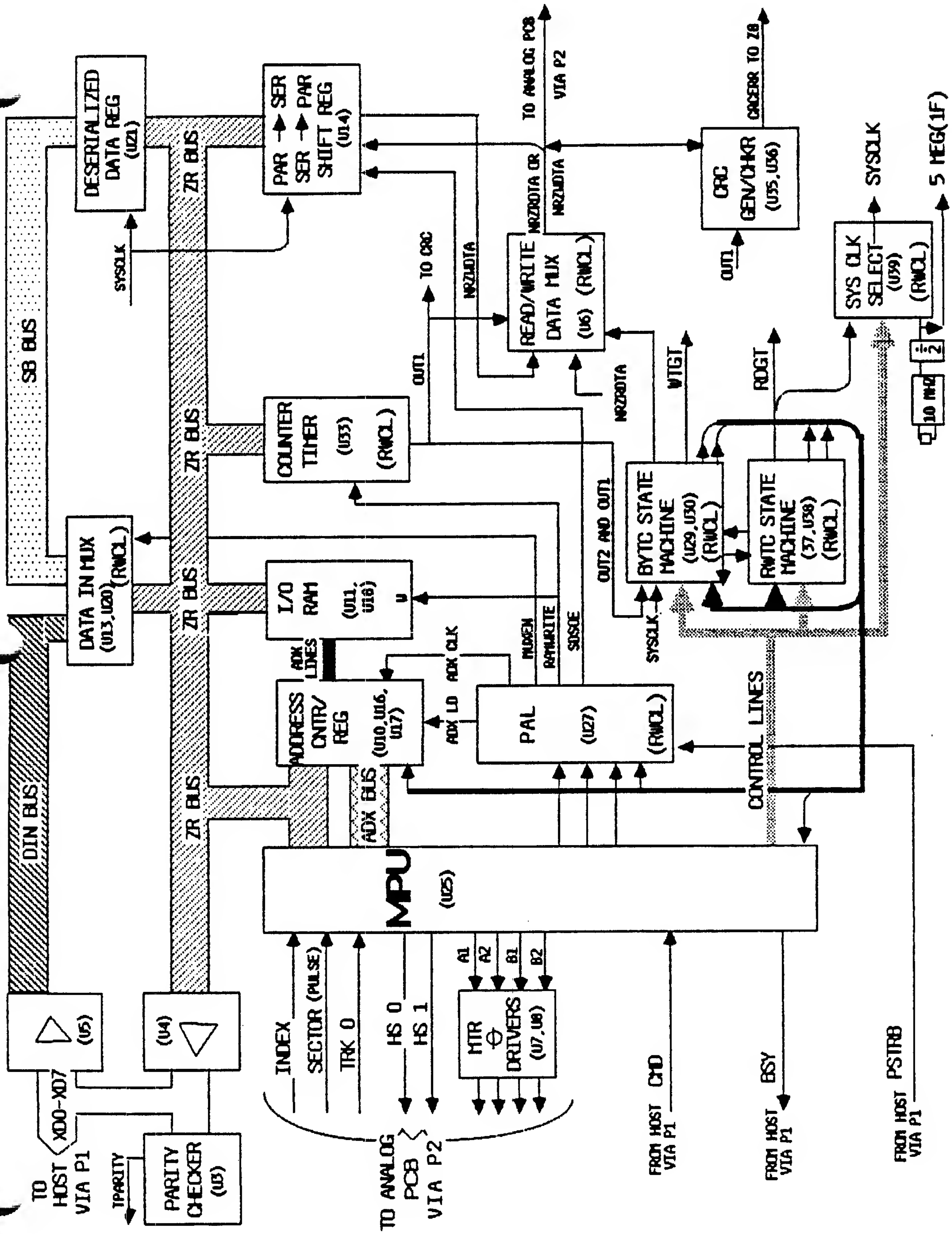
* These bits are sent by the Host driver.

**STATUS 4**

7 - 0 = the number of errors encountered when rereading a block after any read error.

(Continued on the next page.)

CONTROLLER PCB BLOCK DIAGRAM



When the Host interface's CMD signal goes high, the Z8 responds by sending a "01" response byte up to the ZR bus, and off to the left through the buffer to the Host interface. (See figure on the opposite page).

The Host lowers RRW and CMD. When the Host interface lowers CMD, the Z8 should see the Host's "55" acknowledgement coming in through the buffer to the Data In MUX directly to the Z8. This acknowledgement and RRW's being low triggers the Z8 to get the RAM ready to accept the command bytes.

After the first handshake of CMD and BSY, the Host transfers the actual command and delimiting bytes. They come, as do all data, from the Host through the Data In MUX, and are then stored in RAM.

The Z8 then evaluates the command bytes by bringing them in from RAM. After interpreting the command bytes, the Z8 gives its response byte, which is ack'd or nack'd by the Host.

**Refer to the Controller PCB schematic at the end of this section for the following discussion.**

**Command Handshake Component Explanation**

1. When the Host lowers CMD to pin 33 of the Z8, the program in the Z8 will lower BSY on pin 34. When the Host raises CMD, the Z8 puts a 01 on the bus and signals the Host by raising BSY.

   Because RRW is already high to pin 4 of U9, the direction of the data on the bus is from the Pro-File to the Host.

2. The Host interprets the 01 as an ACK and lowers RRW, which changes direction of the bus. Then it places 55 on the bus and signals the Pro-File by lowering CMD.

3. The first phase of every operation is always the same, so the program in the Z8 knows that after sending the 01, the Host should respond with a 55. The Z8 must enable the contents of the DI bus (should be a 55) to be gated onto the ZR bus so that it can verify that the Host has sent a 55.

4. To do this, the Z8 generates the low MSEL1 and MSEL0 signals, to enable the Write Multiplexers (U12 and U20) to select the inputs from the DI bus.

   Once the Z8 senses that CMD has gone low (an indication from the Host that it has put the data, in this case 55, on the data lines), it sends to PAL (U27) the combination of inputs it needs to generate the MUXEN signal, which gates the DI data onto the ZR bus.

   (For a table showing the conditions necessary to generate PAL signals, refer to the PAL Function Table at the end of this section.)

5. With the signals described above, a data path is established to pass the 55 from the DI (Data In) bus, through the Data In Multiplexers (U13, and U20), and onto the ZR bus. The Z8 then reads the 55 from the ZR bus.

6. The Z8 now knows that it will receive some command bytes telling it what operation the Host is requesting, so it puts the first address it wants the command bytes stored in on the ZR bus and causes the PAL to generate the LD (Load) pulse to pin 9 and the clock to pin 2 of each Address Counter.

   This presets the Address Counters to the address in which it wants to store the first command byte. **Note:** A10 in the address must be low to select RAM.

7. The Data In Multiplexers (U12 and U20) are still enabled to select the DI bus inputs and pass them to the ZR bus.

   (Recall that after the Z8 read the 55 (Step #3), it sent to PAL (U27) the combination of inputs it needed to generate the SEL signal to RAM).

8. A data path is now established to pass the command bytes that will shortly follow from the Host to the DI (Data In) bus, through the Write Multiplexers (U13 and U20), onto the ZR bus.

9. The Host waits a short period after each byte is put on the lines for the data to settle, and then generates the PSTRB signal.

10. Because of the PAL's current inputs, the PSTRB signal causes the PAL to generate the RAMWRITE signal from pin 16, which stores what is on the ZR bus into the RAM address specified by the Address Counters.

11. PSTRB also causes the PAL to generate an Address Counter Clock from pin 19, to increment the Address Counters for the next byte to come in.

12. When the Host has finished sending bytes, it raises RRW to pin 4 of U9, to change the direction of the Data bus.

    The Host then raises CMD again to tell the Z8 that no more command bytes are coming. Now the Z8 reads the command bytes from RAM to interpret them.

13. To read the command bytes, the Z8 sequentially sets the Address Counters to the addresses of the command bytes.

    RAMSEL and an address on the lines to the 2114-type RAM fully enable the RAM to put the contents of the address on the ZR bus. As each command byte is read onto the ZR bus, the Z8 reads and interprets it.

14. If the command is for a Read, the Z8 will respond by putting 02 on the ZR bus.

    If the command is for a Write, the response byte will be 03. If a Write/Verify, the response byte will be 04.

    After the Z8 puts the response byte on the ZR bus to the Host, it asserts BSY, signifying it is now performing the operation. The response byte is driven by U4 to the interface of the Host.

15. The Host checks the response. Because it knows which command it requested, it knows which response byte to expect.

    Since the response byte is 02, as expected, the Host acknowledges with 55 and raises CMD (it is true when low, so high means CMD is deactivated).

16. The Command Handshake is now complete. Once the Host raises CMD, the Z8 performs (if necessary) a Seek routine (explained later) to select the proper head and move it over the target track.

17. If the command is a Write or Write/Verify, then there will be another handshake to transfer the Write data during the Seek routine.

18. If the command is a Read, then once the proper head is selected and positioned over the target track, and the Seek has been verified, the Z8 will perform the Read.

## B. Check Header Function

### Check Header Function General Operation

For each Read or Write operation, the specific sector must be located and checked. This is accomplished by the the Z8, and the Read/Write Control Logic, during the Check Header function.

Before the Z8 conditions the logic to start a Read, Write, or Write/Verify operation, it translates the logical block number requested by the Host into target sector information bytes (i.e., head, track, and sector). It then checks to see if the desired block is in the spares table and sets the track, head, and sector accordingly.

The Z8 then sets a complete replica of the target header into a specific area of RAM. (For more information on the Seek routine and other firmware routines used in the Pro-File Z8, refer to the Firmware Routines Description.)

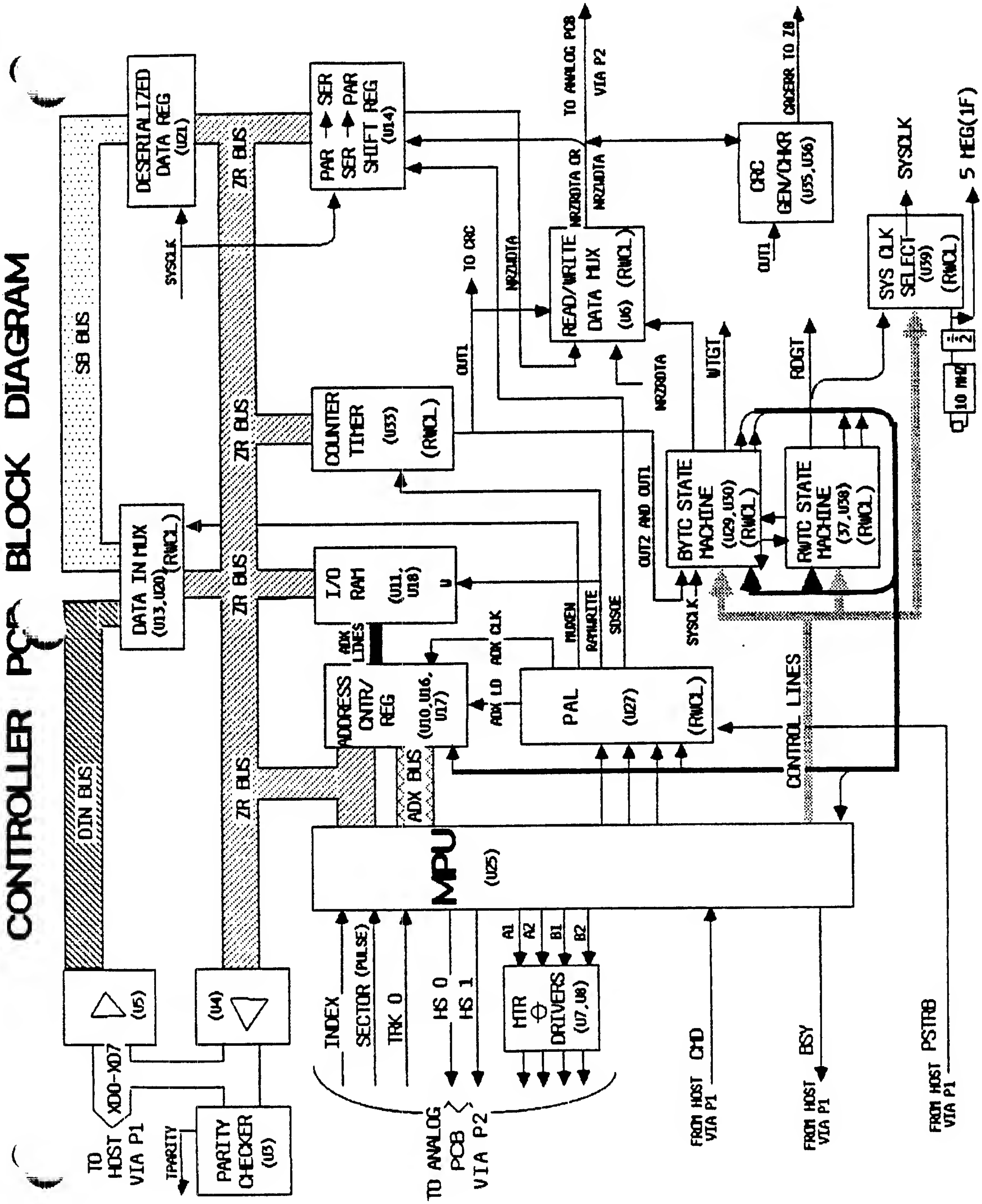
### Seek Routine

The Seek routine is a firmware routine in the Z8. It controls selecting the proper head, positioning the heads, and putting the Read/Write Control Logic in the proper modes for a Check Header function after it has moved the selects

If the current block and the last block read or written have the same track and head, the Z8 will exit the Seek routine because the target head is assumed to be positioned over the target track.

If the track is the same but the head is different, the Z8 will send out enable signals to the target head, wait 750us, and then exit the Seek routine to perform the Host-requested operation.

If the track is different, the Z8 will generate the proper number of stepper pulses on the stepper phase control lines to position the head where it thinks the target track should be. Then it waits for the sector pulse, generated by the Analog PCB when it detects a sector mark.


CONTROLLER PCB BLOCK DIAGRAM
DESERIALIZED DATA REG (U21)
PAR → SER SER → PAR SHIFT REG (U14)
TO ANALOG PCB VIA P2
CRCERR TO Z8
CRC GEN/CHKR (U35,U36)
SYSCLK
5 MEG(1F)
SYS CLK SELECT (U39) (RWCL)
10 MHZ
÷2
READ/WRITE DATA MUX (U6) (RWCL)
NRZRDTA OR NRZWDTA
NRZWDTA
NRZRDTA
TO CRC
OUT1
WTGT
RDGT
SB BUS
ZR BUS
SYSCLK
COUNTER TIMER (U33) (RWCL)
OUT2 AND OUT1
BYTC STATE MACHINE (U29,U30) (RWCL)
RWTC STATE MACHINE (37,U38) (RWCL)
DATA IN MUX (U13,U20) (RWCL)
I/O RAM (U11, U18)
ADX LINES
ADX CLK
MUXEN
RAMWRITE
SDSOE
ADDRESS CNTR/ REG (U10,U16, U17)
ADX LD
PAL (U27) (RWCL)
CONTROL LINES
DIN BUS
ADX BUS
MPU (U25)
(U5)
(U4)
INDEX
SECTOR (PULSE)
TRK 0
HS 0
HS 1
A1
A2
B1
B2
MTR Φ DRIVERS (U7,U8)
CMD
BSY
PSTRB
FROM HOST VIA P1
XD0-XD7
TO HOST VIA P1
TPARITY
PARITY CHECKER (U3)
TO ANALOG PCB VIA P2

When the Z8 sees the sector pulse it starts the State Machine.

(For more information on sector headers and Pro-File disk format refer to the Pro-File HDA description in this section.)

**Block Diagram For Check Header Operation**

The State Machine, in combination with the PAL, moves each successive byte of the header replica into the SERIALIZER, where they are serialized and shifted out in sync with the incoming NRZRDTA.

The target header information and the NRZDTA are compared, and if any difference exists, the State Machine aborts the attempt and resets to wait for the next incoming sector pulse.

The process is repeated until either the header matches the image in RAM or a timeout error occurs (the Z8 program is waiting for the "sector done" from the State Machine). If it doesn't see SECTDN within two revolutions, the Z8 will take over and go through an error recovery routine.)

If the desired operation is to read a block, the logic will accept the data in from disk and will move it into RAM. If the operation is to write a block, the logic will be conditioned to move the data from RAM to the disk.

The circuit description for Check Header function and the Read, Write, and Write/Verify operations are described in the following pages.

**Refer to the Controller PCB schematic at the end of this section for the following discussion.**

**Check Header Function Component Explanation**

1. After the Command Handshake, if the Z8 firmware has interpreted the command, the first thing it will do is put the location of the target sector (i.e., head, track, and sector) in RAM. The Z8 selects the RAM addresses the same way it did when reading the command bytes in the Command Handshake (with the Address Selectors).

2. If the target sector is on a different head or track than the ones already selected, the Z8 will perform the Seek routine to the target track (the one containing the target sector).

   During the Seek routine, the Z8 issues phases from pins 17-20 through U7 and U8 to the Head Stepper motor on the HDA. It issues the exact number necessary to put the heads where it thinks the the target track is (this is a program function of the Z8).

3. When the head movement is completed, the Z8 enables (loads) the target head.

4. At this time, the Z8 lowers ZRW and AS to cause the PAL to produce the TIMSEL signal out of pin 12 to the Programmable Counter Timer U33. The Z8 then writes commands to the Programmable Counter Timer U33 to program the following registers:

   a. OUT1 register for 555.
   b. OUT2 register for 557.
   c. OUT3 register for 521.

   The counts are shown in the diagram on the opposite page with the events they are timing.

(Continued on the next page.)

5. The Z8 then causes the SEL signal out of pin 17 of the PAL to be generated. This enables the RAM to gate the contents of address 0 (since that is the address in the Address Counters at this time) onto the ZR bus to the inputs of U14, the Deserializer Shift register.

   Note: Addresses 0, and 1 both contain all 0's. The sector location information begins with the track at address 2.

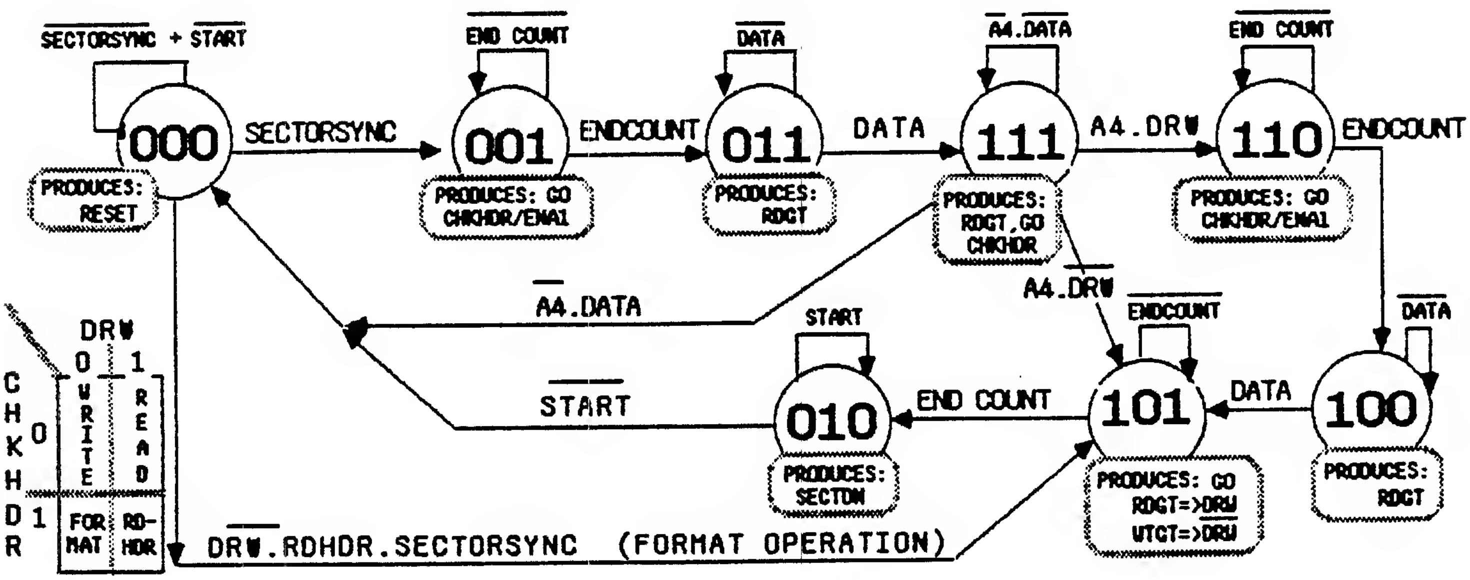
6. The Z8 then generates the START signal to:

   a. Remove the reset to enable the CRC Error FF.
   b. Remove the reset to enable the storage FFs for the Programmable Counter/Timer in U34.
   c. Remove the reset to enable pin 13 of U39 the System Clock Selector.
   d. Remove the reset to enable the latches in the BYTC (U30) and RWTC (U38) State Machine.

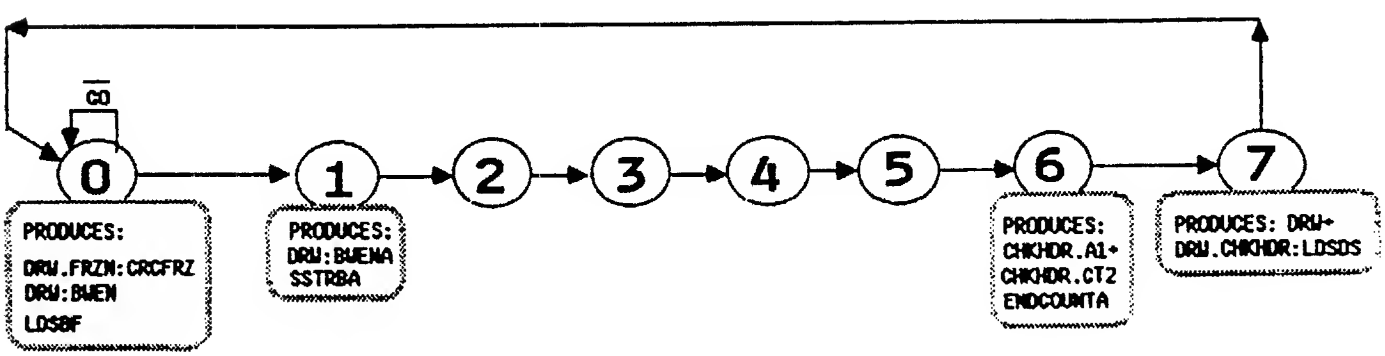
7. When the Analog PCB detects a sector mark (gap) on the target track, it generates the SECTOR signal to pin 30 of the Z8 and pin 15 of U30, the latch for the BYTC State Machine, causing the State Machine to advance from sequence 0 to sequence 1.

(Continued on the next page.)

# STATE MACHINE SEQUENCE DIAGRAM




# STATE MACHINE PHASE (BIT TIME) DIAGRAM



**State Machine Operation**

8. Each State Machine is composed of a ROM device and a latch. The inputs to the ROM select the ROM address to be read out. The bits in the contents of this address are used as control signals or select inputs to the latch. The outputs of the latch feed back around to the inputs of the ROM to select the next address in the sequence.

9. Various events (i.e., SECTOR, ENDCOUNT, DATA, etc.) determine the sequence of the ROM addresses to be read out and, therefore, which control signals will be enabled. These control signals regulate the sequence of functions that must occur for each operation. The sequences for the Check Header function are discussed under that header.

10. Refer to the diagram at the top of the opposite page for the following discussion. It shows the sequence of State Machine paths and the conditions that determine the next path to be selected. For example, the diagram shows that during sequence 0, the critical signal that the Controller PCB is waiting for is SECTORSYNC (sector mark).

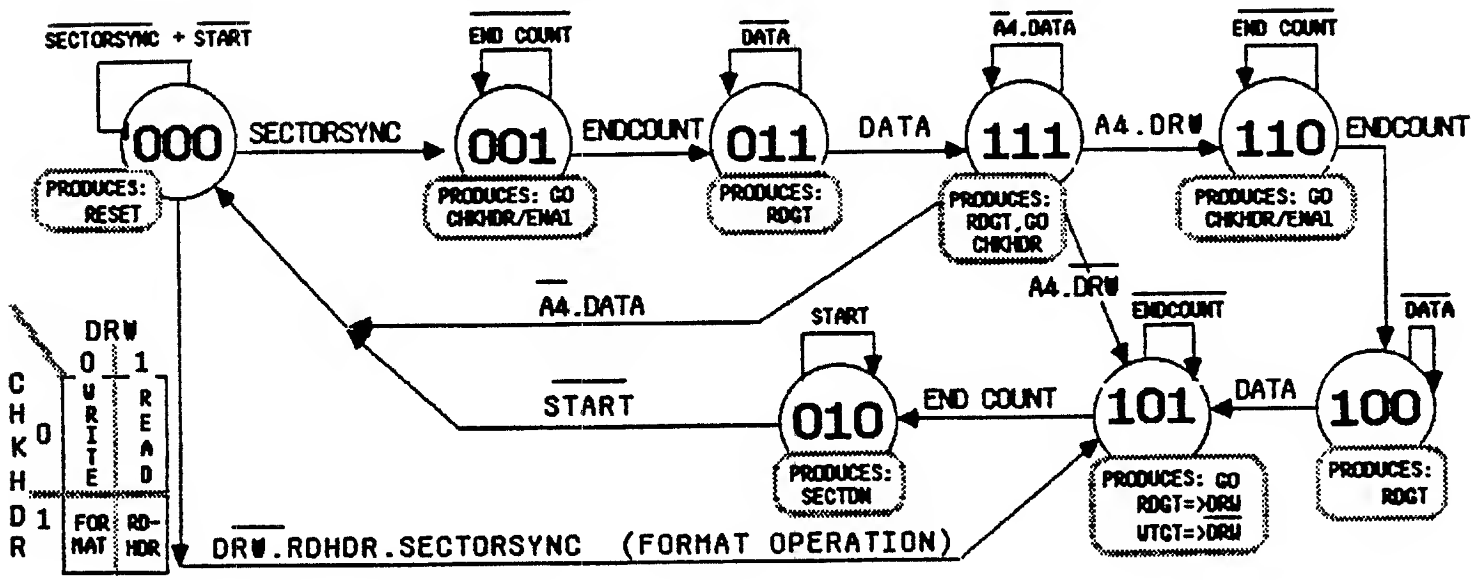
11. Once that signal occurs, depending on whether RDHDR is true or not (RDHDR is only true while formatting the HDA), a path is selected to sequence 1 or 5. During normal operation, RDHDR is low, so the State Machine advances to sequence 1.

    At sequence 1 the critical signal is ENDCOUNT. When ENDCOUNT occurs in sequence 1, the only path is to sequence 3, etc.

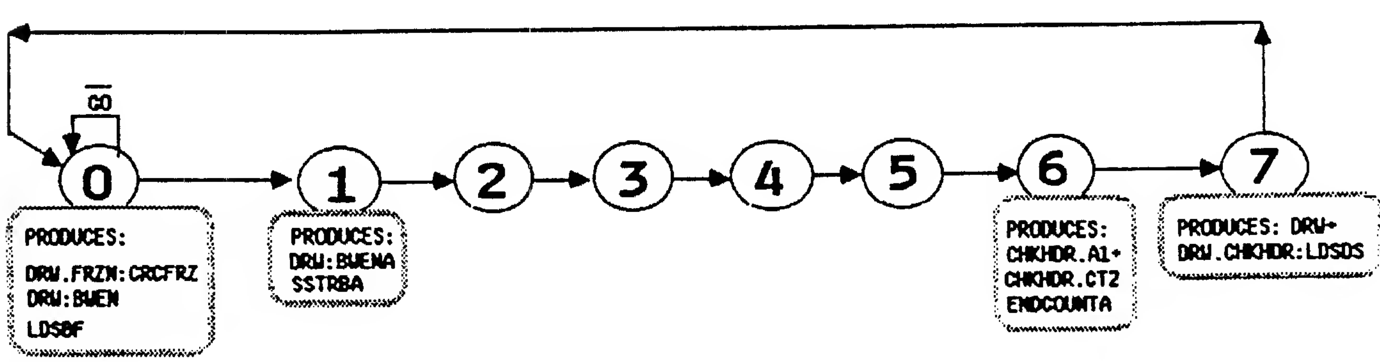
    This diagram is true for all operations. During the Command Handshake, the Z8 interprets the command bytes from the Host to determine the operation requested.

(Continued on the next page.)

# STATE MACHINE SEQUENCE DIAGRAM




# STATE MACHINE PHASE (BIT TIME) DIAGRAM



12. As an operation is implemented, the Z8 and PAL control the selection of sequence paths with their inputs to the State Machine (i.e., A4, RDHDR, CHKHDR/ENA1, DRW).

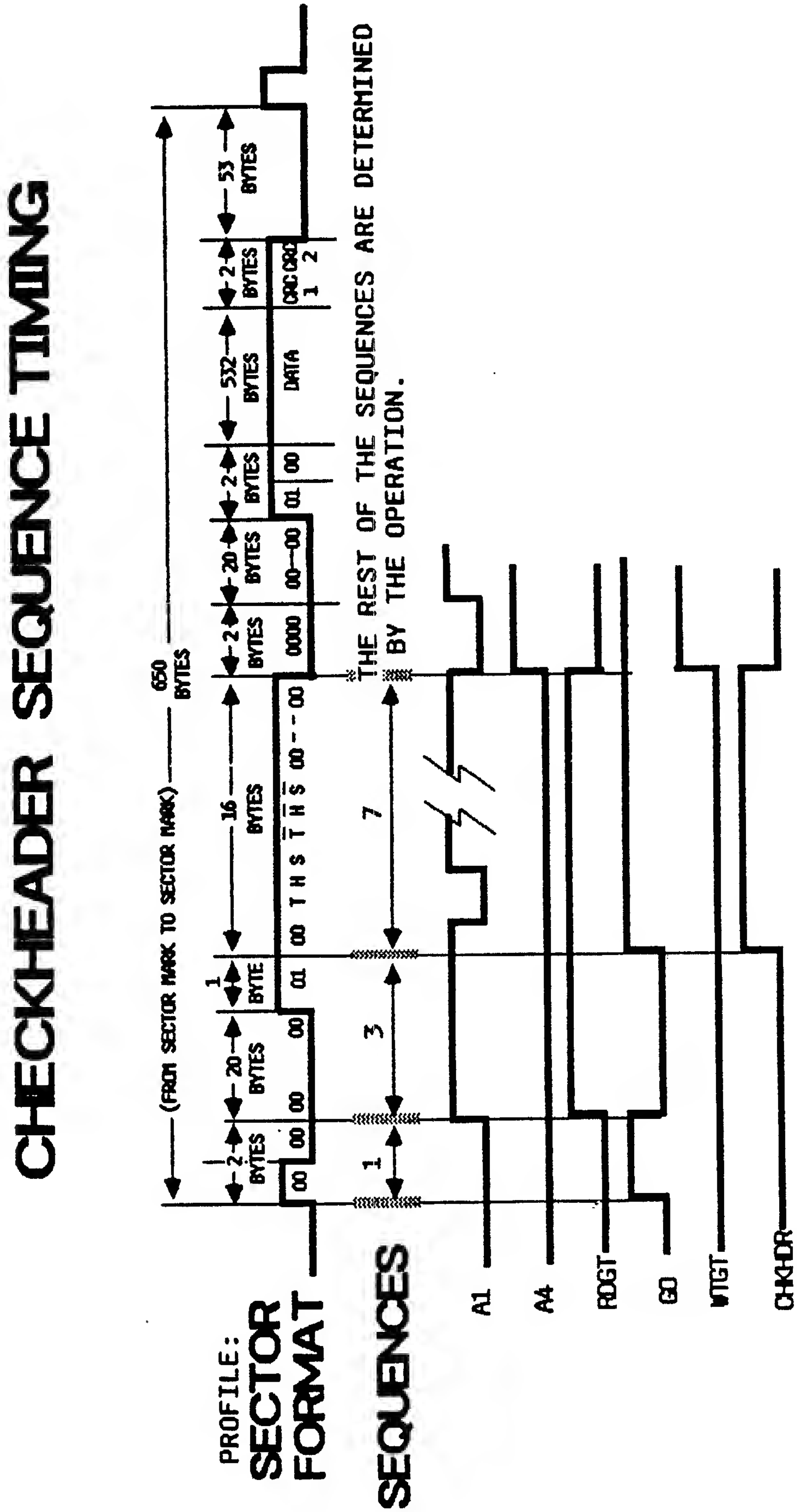
13. The program in the Z8 selects these signals depending on which operation it is trying to implement.

14. The State Machine Phase diagram at the lower part of the opposite page shows when (at which bit time in the processing of a serial byte) a signal may occur during a sequence.

    For example, during sequence 7, every time a complete byte of data has been processed (QC goes high, indicating 8 clocks have been counted by the Divide-by-8 Counter U22) at clock 1 of the next byte, an SSTRB signal is generated out of pin 15 of U38.

    Although neither of the diagrams shows the sequence during which SSTRB will occur, the lower diagram does show the bit time of a byte when it might become active.

(Continued on the next page.)


CHECKHEADER SEQUENCE TIMING
PROFILE:
SECTOR FORMAT
SEQUENCES
(FROM SECTOR MARK TO SECTOR MARK)
650 BYTES
2 BYTES
20 BYTES
1 BYTE
16 BYTES
532 BYTES
53 BYTES
00 T H S T H S 00 - - 00
0000
00—00
01 00
DATA
CRC CRC 1 2
THE REST OF THE SEQUENCES ARE DETERMINED BY THE OPERATION.
A1
A4
RDGT
GO
WTGT
CHKHDR

15. Sequence 0 is a wait state for the State Machine. When the SECTOR signal occurs to pin 13 of U30, it produces a low to pin 19 of U37, selecting the ROM address that advances the RWTC State Machine to sequence 1.

16. During sequence 1, the GO signal is generated out of pin 14 of U37 (see Timing Diagram). The GO signal enables the Divide-by-8 Counter to count clocks. During sequence 1 the clocks selected by the System Clock Selector U39 are those generated by the crystal oscillator.

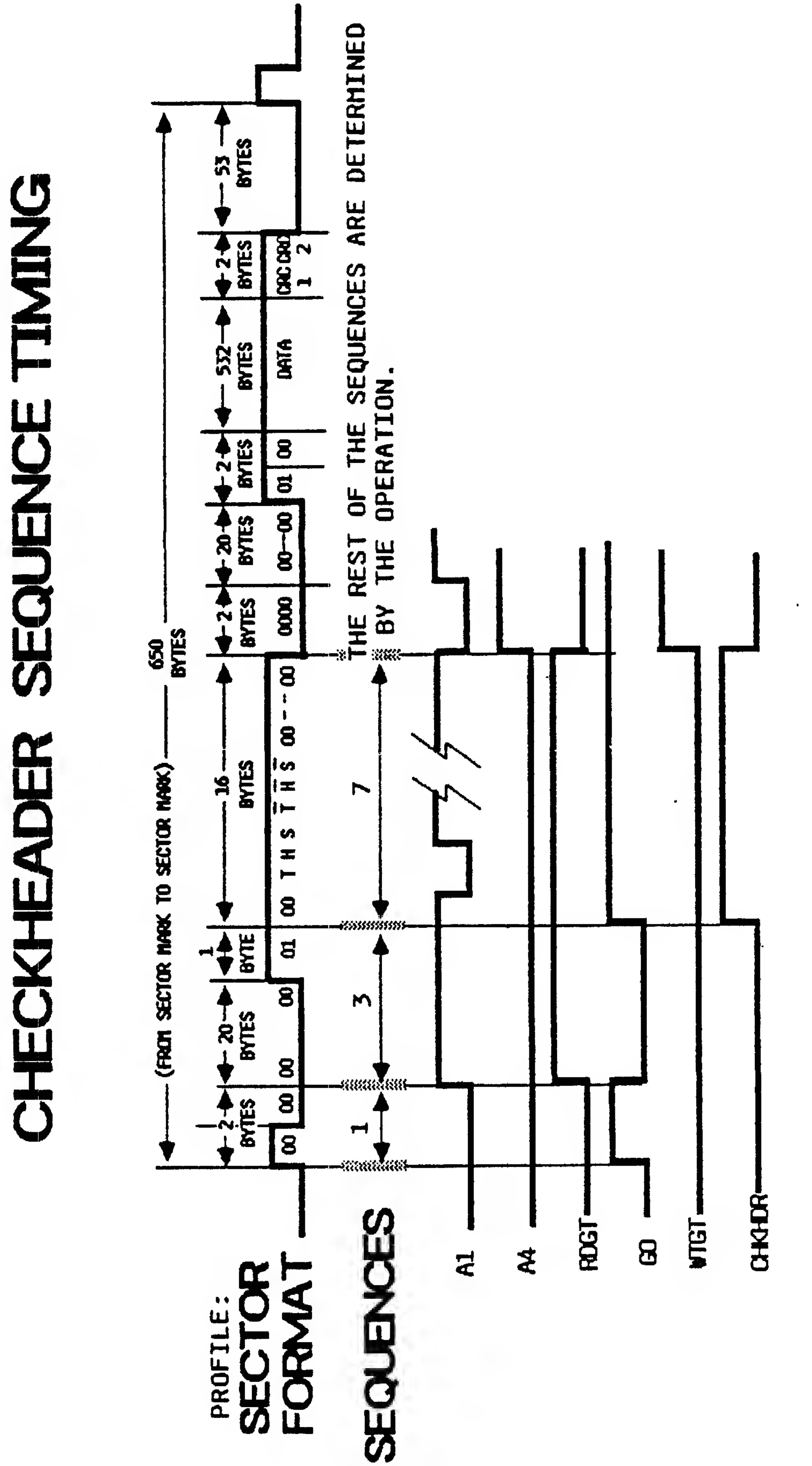
17. To review what has happened so far: We are still in the Check Header function. The heads have finished their movement, and the proper head has been enabled. Now the Z8 wants to confirm that the target head is in fact over the target track, which it does by reading three consecutive sector headers and comparing their header information with target head and track information currently in RAM.

    After the initial setup, the Controller PCB waited for the Analog PCB to detect a sector mark that signified that the beginning of a new sector was about to pass under the selected head. When the SECTOR pulse occurred, it advanced the State Machine to sequence 1.

    The sector header is the first part of the sector after the first sync byte field. The Z8 doesn't want to read the first two bytes of any sync byte field because they are unreliable.

    So sequence 1 is simply a control state to hold the circuitry for the first two sync bytes, in case spurious data occur during that period. (For more information on the composition of a sector, refer to the Format description of the Pro-File HDA Description in the Appendices section.)

18. Every time the Divide by 8 counter counts 8 bit-clocks it produces a positive transition on its QC output. This signal goes to the clock input of the Programmable Timer (U33), which decrements each of its counters once for every pulse.


CHECKHEADER SEQUENCE TIMING
PROFILE:
SECTOR FORMAT
SEQUENCES
(FROM SECTOR MARK TO SECTOR MARK)
650 BYTES
2 BYTES
20 BYTES
1 BYTE
16 BYTES
2 BYTES
20 BYTES
2 BYTES
532 BYTES
2 BYTES
53 BYTES
00 00 00 00 00
01
00 T H S T̄ H̄ S̄ 00 -- 00
0000
00--00
01 00
DATA
CRC 1 CRC 2
1
3
7
THE REST OF THE SEQUENCES ARE DETERMINED BY THE OPERATION.
A1
A4
RDGT
GO
WTGT
CHKHDR

19. Each QC also goes to the State Machine, causing U38 to produce the SSTRB pulse out of pin 15 at phase 1 of the following byte. This signal goes to the PAL on pin 7, causing it to increment to the next Address.

20. The SSTRBs from the first two sync bytes cause the Address Counters U10, 16, and 17 to increment to a count of 1 (from 0). This causes the signal A1 to go to pin 5 of U29, causing the State Machine to produce the ENDCOUNT signal putting the State Machine in sequence 3.

21. Sequence 3 allows time for the VCO on the Analog PCB to sync to the sync byte field. While this is happening the Controller PCB is waiting for data (in this case the sector header). In sequence 3, the RDGT signal (pin 7 of U38) is generated by the State Machine.

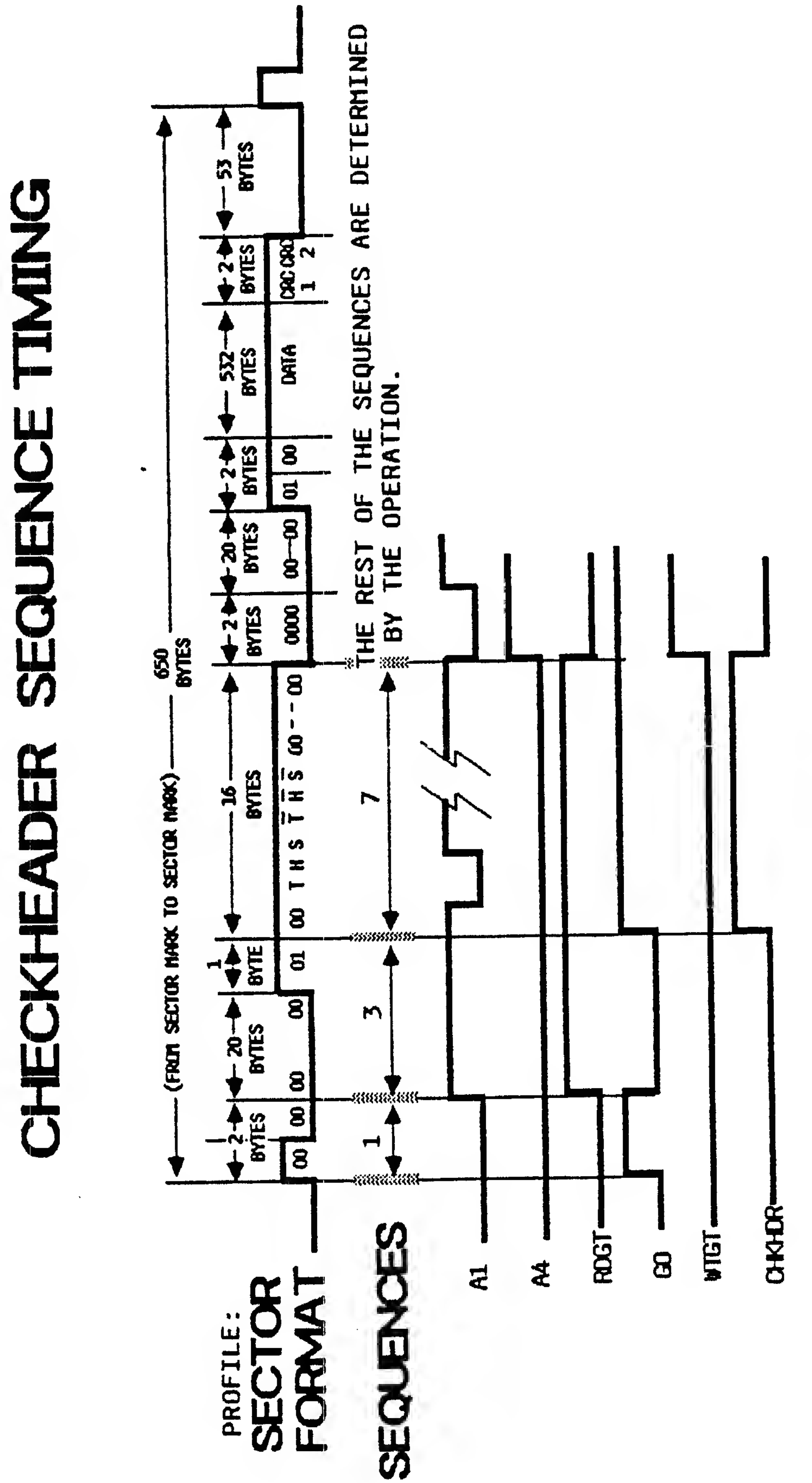
    This signal goes to the Analog PCB to enable it to convert the analog signal from the HDA head into NRZ data (NRZRDTA) and to generate RDCLKs in sync with this data.

    RDGTA also goes to the System Clock Selector U31 and U32 to select RDCLKs as the system bit clock.

22. Sequence 3 also causes the GO signal to go low from pin 14 of U37 in the State Machine. The low GO signal resets the Deserializer chip (U14). This condition causes a low output from pin 17 of U14, which goes to pin 13 of the Exclusive Or in U28.

23. Pin 12 of U28 is NRZRDTA. At this point in reading the sector, NRZRDTA should be all 0's (because the sync bytes are all 0's), so pin 12 should be low, which, along with the low pin 17, results in a low out of pin 11 of U28.

24. Pin 11 remains low until the sync byte just before the sector header (which contains a 1) occurs; now the inputs to the Exclusive Or are different, making DATA signal on pin 11 high.


CHECKHEADER SEQUENCE TIMING
PROFILE:
SECTOR FORMAT
SEQUENCES
(FROM SECTOR MARK TO SECTOR MARK) 650 BYTES
2 BYTES
20 BYTES
1 BYTE
16 BYTES
2 BYTES
20 BYTES
2 BYTES
532 BYTES
2 BYTES
53 BYTES
00 00 00 00 00
01
00 T H S T̄ H̄ S̄ 00 - - 00
0000
00—00
01 00
DATA
CRC CRC 1 2
1
3
7
THE REST OF THE SEQUENCES ARE DETERMINED BY THE OPERATION.
A1
A4
RDGT
GO
WTGT
CHKHDR

25. As can be seen from the State Machine Sequence diagram, the high DATA signal is the condition that causes the State Machine to advance to sequence 7.

    The purpose of sequence 7 is to read the sector header field of a sector. Recall that the Address Counters are pointing to RAM address 01, which contains 0's. The Z8 has the first byte of the target sector header field waiting on the ZR bus (this byte is always a 00).

26. When the State Machine advances to sequence 7:

    a. The LDSDS out of pin 12 of U29 goes high, causing the Deserializer to load the 00 from RAM address 1 (the first byte in the sector header should also contain a 00).
    b. Every QC output from the Divide-by-8 Counter (happens once per byte) to pin 3 of U29 will cause pin 8 to go high, causing the SSTRB signal out of pin 15 of U38.
    c. The CHKHDR signal out of pin 10 of U38 goes high, enabling the PAL to pass SSTRBs through as Address Counter increment pulses to the Address Counters.

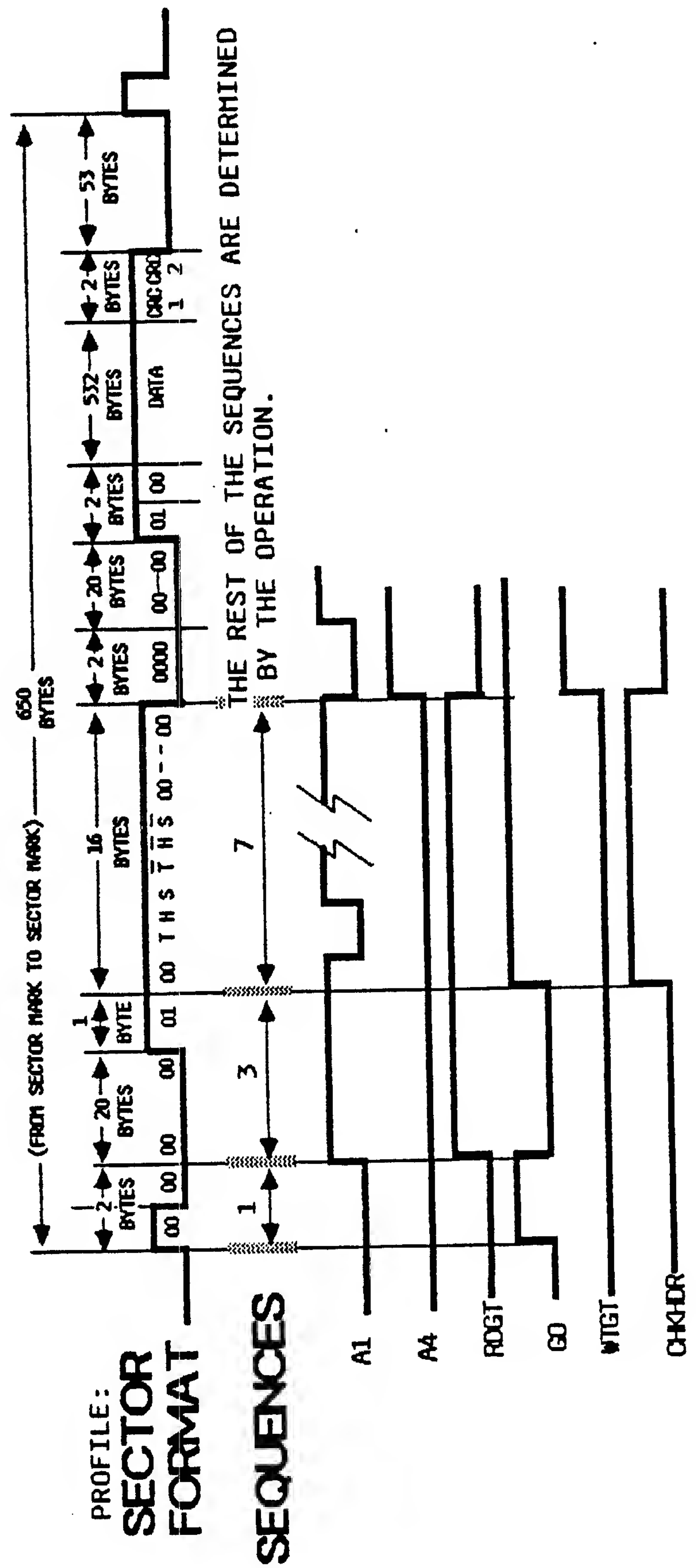
27. NRZRDTA that comes in during sequence 7 should be sector header information. The first byte of target sector header information in the Deserializer is clocked out in sync with the NRZRDTA coming in from the Analog PCB.

    These two signals are compared in the Exclusive Or in U28. If any bit does not match up, this gate will output high causing the State Machine to generate a SECTDN signal out of pin 2 of U30, resetting the Read/Write Control circuitry to sequence 0.

28. If the first byte is correct, the QC output from the Divide by 8 chip U22 will cause an SSTRB to increment the Address Counters at bit 1 of the next byte.

    This signal puts the next byte of target sector location information on the ZR bus. At bit 7 of that byte, if the comparison is still OK, LDSDS will occur to load the second byte of target sector location information into the Deserializer chip.

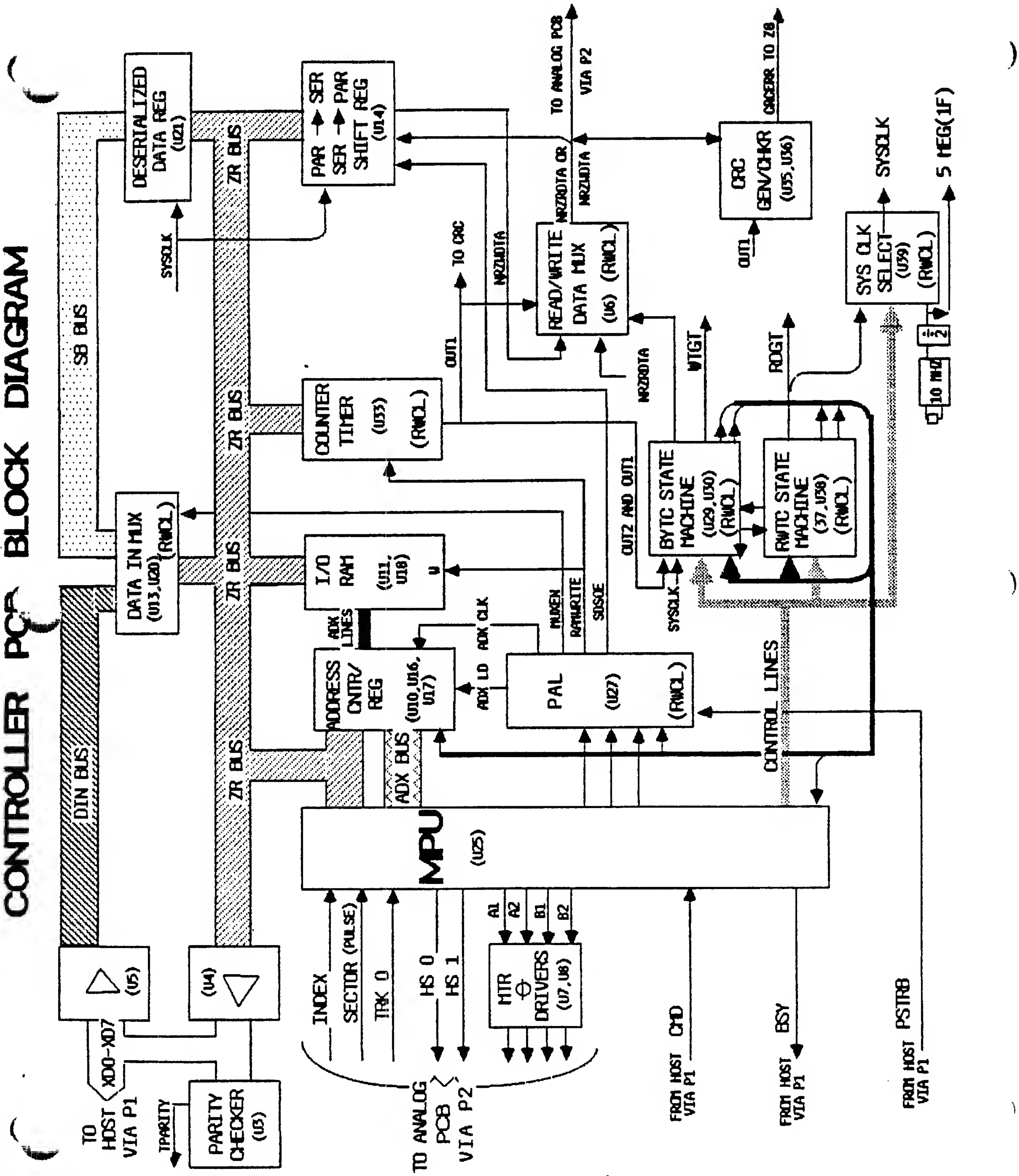
# CHECKHEADER SEQUENCE TIMING



29. The 16 bytes of target sector header information were stored in 16 memory locations of RAM. When the Address Counters increment past 16, A4 goes high, which signifies to the State Machine that a complete sector header has been checked and must be OK because the DATA signal must have remained low.

    Signal A4 causes the State Machine to advance to sequence 5 or 6, depending on whether DRW is high or low, which depends on which operation the Host requested.

30. If DRW is high, the State Machine will go to sequence 6 for a Read operation. If DRW is low the State Machine will go to sequence 5 for a Write operation.


CONTROLLER PCB BLOCK DIAGRAM
DESERIALIZED DATA REG (U21)
PAR → SER SER → PAR SHIFT REG (U14)
TO ANALOG PCB VIA P2
CRC GEN/CHKR (U35,U36)
CRCERR TO Z8
SB BUS
ZR BUS
DIN BUS
ADX BUS
SYSCLK
READ/WRITE DATA MUX (U6) (RWCL)
NRZRDTA OR NRZWDTA
TO CRC
OUT1
NRZWDTA
NRZRDTA
COUNTER TIMER (U33) (RWCL)
SYS CLK SELECT (U39) (RWCL)
5 MEG(1F)
10 MHZ
÷2
WTGT
RDGT
BYTC STATE MACHINE (U29,U30) (RWCL)
RWTC STATE MACHINE (37,U38) (RWCL)
OUT2 AND OUT1
DATA IN MUX (U13,U20) (RWCL)
I/O RAM (U11, U18)
ADX LINES
ADX CLK
MUXEN
RAMWRITE
SDSOE
ADDRESS CNTR/ REG (U10,U16, U17)
ADX LD
PAL (U27) (RWCL)
CONTROL LINES
MPU (U25)
(U5)
(U4)
PARITY CHECKER (U3)
TPARITY
XD0–XD7
TO HOST VIA P1
INDEX
SECTOR (PULSE)
TRK 0
HS 0
HS 1
A1
A2
B1
B2
MTR Φ DRIVERS (U7,U8)
TO ANALOG PCB VIA P2
FROM HOST CMD VIA P1
FROM HOST BSY VIA P1
FROM HOST PSTRB VIA P1

## 3. Operations

The first part of all operations is the Check Header function (previously described). The following discussions deal with each of the three Pro-File operations after the Check Header function has been performed, which is after sequence 7 of the Read/Write control circuitry.

Once the Seek to the target track is confirmed, and the Z8 has a reference on where the target track is, the Z8 will condition the circuitry for the execution of an operation a number of sectors before the target sector, called the sector interleave (because the data come off the disk too fast for the circuitry on the Controller PCB to process the target sector's header).

The sector interleave is specific to the Host operating system using the Pro-File and to the operation being performed.

After the sector interleave, when the sector pulse for the target sector occurs, the Z8 enables the control logic to activate the circuitry for the operation requested.

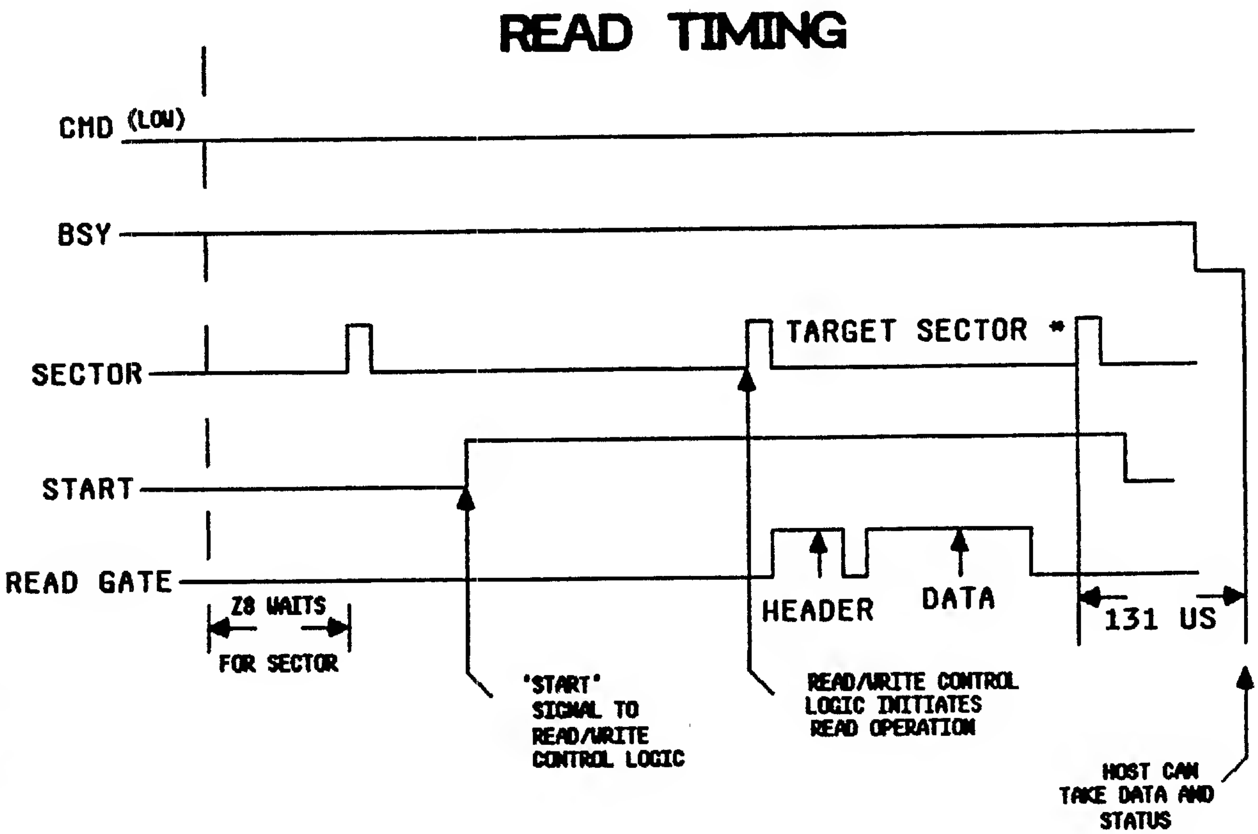
### 3.1.1 Read Operation General Explanation

During a Read operation, after the Check Header function, NRZDTA enters through the Read Data MUX into the Deserializer.

In the Deserializer, NRZDTA is converted to parallel bytes, and then transferred to the Deserialized Data Register, held momentarily, and gated through the Data In MUX to the RAM.

When the sector (block) is complete, the control logic tells the Z8 to lower the BSY line. It does, and then the Host uses PSTRB to strobe the data out of RAM through the output buffer to the Host interface PCB.

The RAM address counter has been set to the beginning of the data, and each strobe sent by the Host increments the Address Counters to the next address.




IF THE HEADER READ, IS NOT FROM THE TARGET SECTOR, THE HARDWARE CONTINUES TO READ SECTOR HEADERS UNTIL THE TARGET HEADER IS FOUND.
BSY, AND START REMAIN HIGH.

**Refer to the Controller PCB schematic at the end of this section for the following discussion.**

**3.1.2 Read Operation Component Explanation**

1. As can be seen in the State Machine Sequence diagram after sequence 7 (the end of the Check Header function), if DRW is high (indicating the command bytes from the Host specified a Read operation) and A4 goes high (indicating all 16 bytes of the sector header field have been checked), the State Machine will advance to sequence 6.

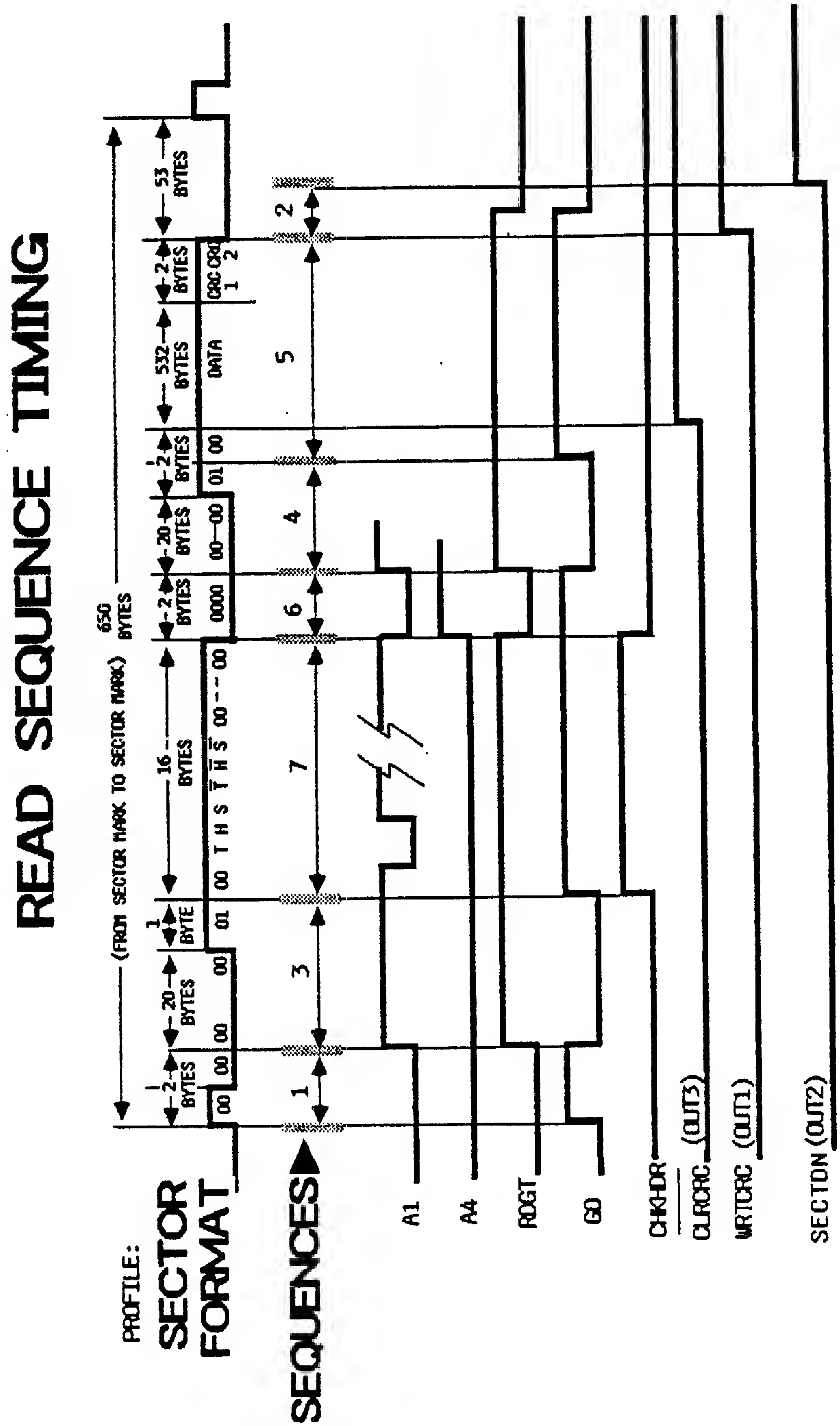
2. Sequence 6 holds the Read/Write control circuitry in a wait state during the first two bytes of the sync byte field preceding the data field. These first two bytes can contain spurious data that could cause an error.

3. Because RDGT is not produced in sequence 6, the System Clock Selector U31 and U32 selects clocks from the crystal oscillator.

4. After two bytes of these clocks have been received, the A1 signal from the Address Counters goes true, to pin 5 of U29. This causes the BYTC (Byte Control) State Machine to produce ENDCOUNT out of pin 10 of U30, putting the State Machine in sequence 4 (as shown in the State Machine Sequence diagram).

5. Sequence 4 allows time for the VCO on the Analog PCB to sync to the sync byte field. While this is going on the Controller PCB is waiting for data (in this case the data field). In sequence 4, the RDGT signal (pin 7 of U38) is generated by the State Machine. This signal goes to the Analog PCB to enable it to convert the analog signal from the HDA head into NRZ data (NRZRDTA) and to generate RDCLKs in sync with this data. RDGTA also goes to the System Clock Selector U31 and U32 to select RDCLKs as the system bit clock.

6. Because the GO signal is low again at the beginning of sequence 4 the Deserializer chip (U14) is reset. This condition causes a low output from pin 17 of U14, which goes to pin 13 of the Exclusive Or in U28.


READ SEQUENCE TIMING
PROFILE: SECTOR FORMAT
SEQUENCES
650 BYTES (FROM SECTOR MARK TO SECTOR MARK)
2 BYTES
20 BYTES
1 BYTE
16 BYTES
2 BYTES
20 BYTES
2 BYTES
532 BYTES
2 BYTES
53 BYTES
00 00 00 00 00 01 00 T H S T̄ H̄ S̄ 00 - - 00
0000 00—00 01 00
DATA
CRC 1 CRC 2
1 3 7 6 4 5 2
A1
A4
RDGT
GO
CHKHDR
CLRCRC (OUT3)
WRTCRC (OUT1)
SECTON (OUT2)

7. Pin 12 of U28 is NRZRDTA. At this point in reading the sector, NRZRDTA should be all 0's (because the sync bytes are all 0's), so pin 12 should be low, which, along with the low pin 17, results in a low out of pin 11 of U28.

8. Pin 11 remains low until the sync byte just before the data field (which contains a 1) occurs; now the inputs to the Exclusive Or are different, making DATA signal on pin 11 high .

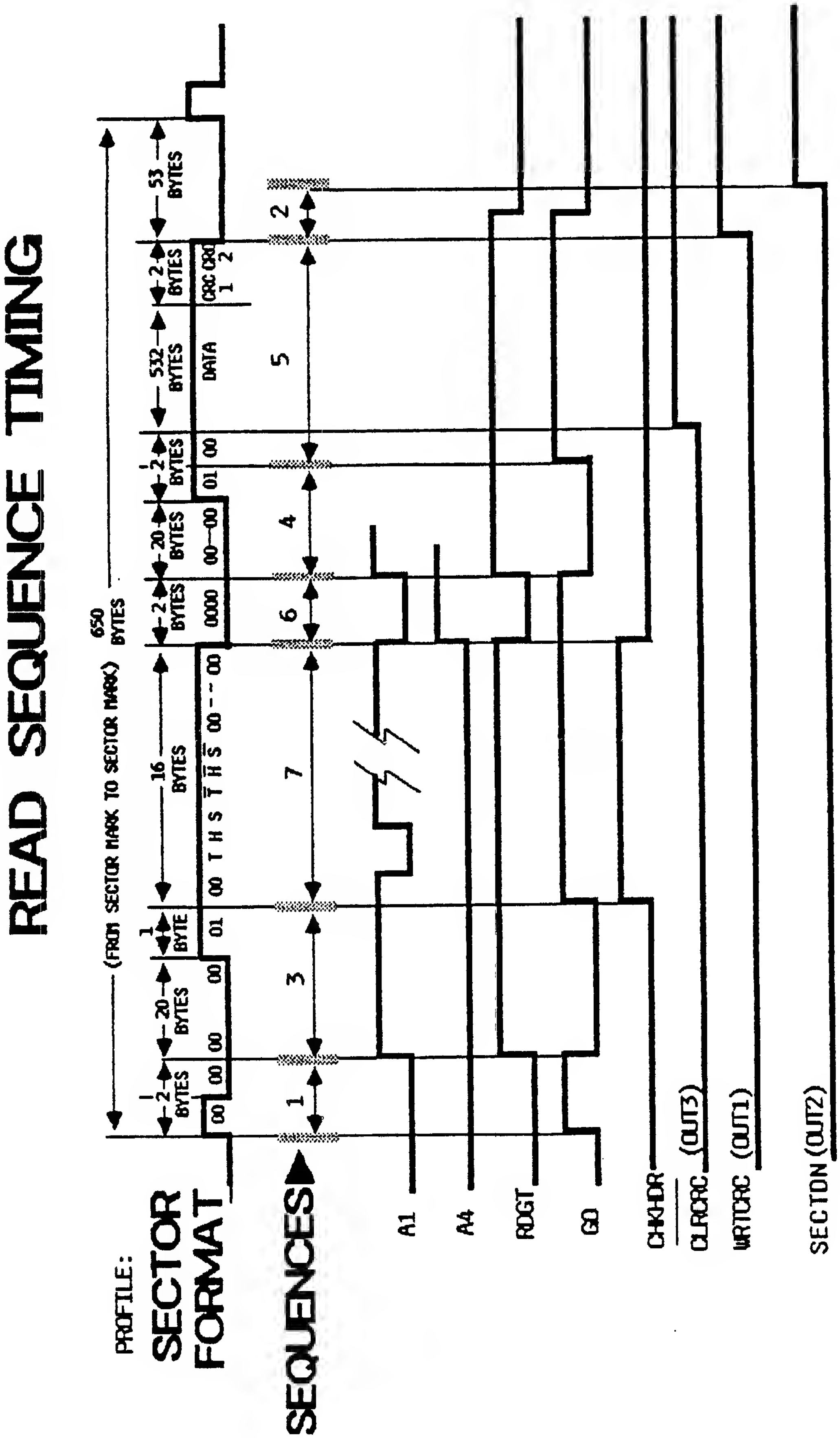
9. As can be seen from the State Machine Sequence diagram, the high DATA signal is the condition that causes the State Machine to advance to sequence 5.

10. Sequence 5 generates either RDGT or WTGT, depending on the level of DRW. If DRW is high, the command bytes from the Host have stipulated a Read operation, so RDGT will remain high. If DRW is low, WTGT will occur. Sequence 5's function during Read is to read the data field from the target sector on the HDA.

11. The GO signal goes high at sequence 5 to enable the Divide-by-8 Counter U22 to begin counting RDCLKs again and to produce QC pulses once per byte to decrement the counting registers in the Programmable Counter/Timer (U34).

12. Since NRZDTA is in serial form coming from the Analog PCB, it must be deserialized and sent to RAM in bytes. This is done by the Serial/Deserial Shift Register U14. NRZRDTA comes in to pins 5 and 6 of the Read Data MUX U6. Because this is a Read operation, pin 2 is low, enabling the Read Data MUX to pass serial NRZRDTA to pin 11 of the Serial/Deserial Shift Register U14.

13. The NRZRDTA is clocked into the Serial/Deserial Shift Register U14 with RDCLKs at pin 12. At the phase 0 following a byte of data, the contents of the Serial/Deserial Shift Register U14 are enabled to merge onto the ZR bus by the signal SDSOE from pin 13 of the PAL U27. This timing relationship can be seen on the State Machine Phase diagram (shown in the Check Header function circuit description).


READ SEQUENCE TIMING
PROFILE:
SECTOR FORMAT
SEQUENCES
650 BYTES
(FROM SECTOR MARK TO SECTOR MARK)
2 BYTES
20 BYTES
1 BYTE
16 BYTES
2 BYTES
20 BYTES
2 BYTES
532 BYTES
2 BYTES
53 BYTES
DATA
CRC CRC 1 2
A1
A4
RDGT
GO
CHKHDR
CLRCRC (OUT3)
WRTCRC (OUT1)
SECTON (OUT2)

14. LDSBF (from pin 12 of U29 the State Machine) also occurs at phase 0, to load the byte from the ZR bus into the Deserialized Data Register U21.

15. Once U21 contains a byte of received data, its contents merge on the SB bus. The Data In MUXers U13 and U21 are enabled by the high MSEL1 signal from the Z8 to pin 1 to select the SB bus, and so pass the byte to the data input of the RAM.

16. In sequence 5, the RWTC State Machine produces SSTRBs each phase 1 from pin 15 of U38. This happens once per byte, triggered by the inputs from the Divide-by-8 Counter U22.

17. During sequence 5, the PAL U27 generates the low RAMWRITE signal, on pin 16, to the RAM each time SSTRB occurs. This enables the byte of information from the Data In MUXers U13 and U21 to be stored into the address currently being selected by the Address Counters.

18. The SSTRBA signal also increments the Address Counters U16, U17, and U10 after storing each byte received from the disk.

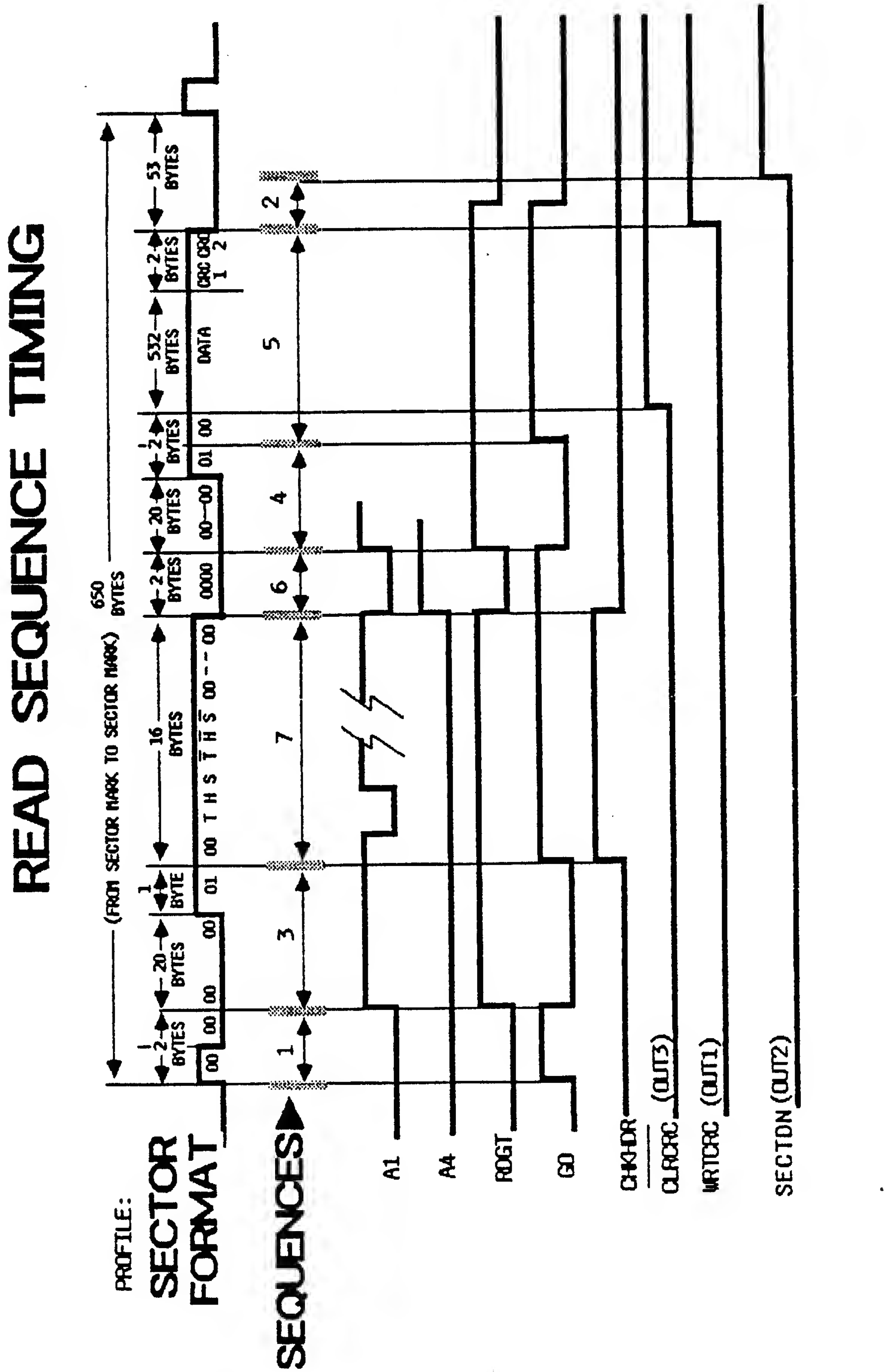
**CRC Operation**

19. Prior to sequence 6, during the Check Header function, the Z8 reprogrammed the Programmable Counter/Timer (U34) so that:
    a. OUT1 register contained 553.
    b. OUT2 register contained 555.
    c. OUT3 register contained 19.

    The Programmable Counter/Timer (U34) is enabled to decrement all of its registers each time an SSTRB occurs, but only while GO is high.

    During the sequences of the first part of the Read operation (including the Check Header function), each of these registers is decremented by the following amounts.

| Sequence | Amounts |
|---|---|
| 1 | 2 |
| 7 | 16 |


READ SEQUENCE TIMING
PROFILE:
SECTOR FORMAT
SEQUENCES
650 BYTES
(FROM SECTOR MARK TO SECTOR MARK)
2 BYTES
20 BYTES
1 BYTE
16 BYTES
2 BYTES
20 BYTES
2 BYTES
532 BYTES
2 BYTES
53 BYTES
00 00 00 00 00 01 00 T H S T̄ H̄ S̄ 00 - - 00 0000 00—00 01 00 DATA CRC 1 CRC 2
1 3 7 6 4 5 2
A1
A4
RDGT
GO
CHKHDR
CLRCRC (OUT3)
WRTCRC (OUT1)
SECTON (OUT2)

This brings the amounts in each register to:

a. OUT1 register contains 535.
b. OUT2 register contains 537.
c. OUT3 register contains 1.

20. The second byte received during the data field of sequence 5 is never data but instead is a 00. The GO signal is high for this byte, so the SSTRB generated during its reception also decrements the registers in the Programmable Counter/Timer (U34). This causes the OUT3 register to arrive at 0, causing CLRCRC to go high on pin 1 of an Exclusive Or gate in U28.

NOTE: Although the three U28 gates inputting to the CRC circuit are shown to be exclusive Ors, they are being used as inverters.

21. The other input to this gate (pin 2) is constantly high. Having two highs causes the gate to output a low, removing the high reset on pin 4 of the CRC Generator/Checker U35.

22. NRZRDTA is going to pin 11 of the CRC Generator/Checker U35. This chip is now enabled to use its internal logic to process each received bit from the data field and reflect its CRC status with its output on pin 13. If an error occurs, pin 13 of the CRC Generator/Checker U35 will go high, setting the CRC Error FF U36, which produces the low CRCERR signal to pin 30 of the Z8.

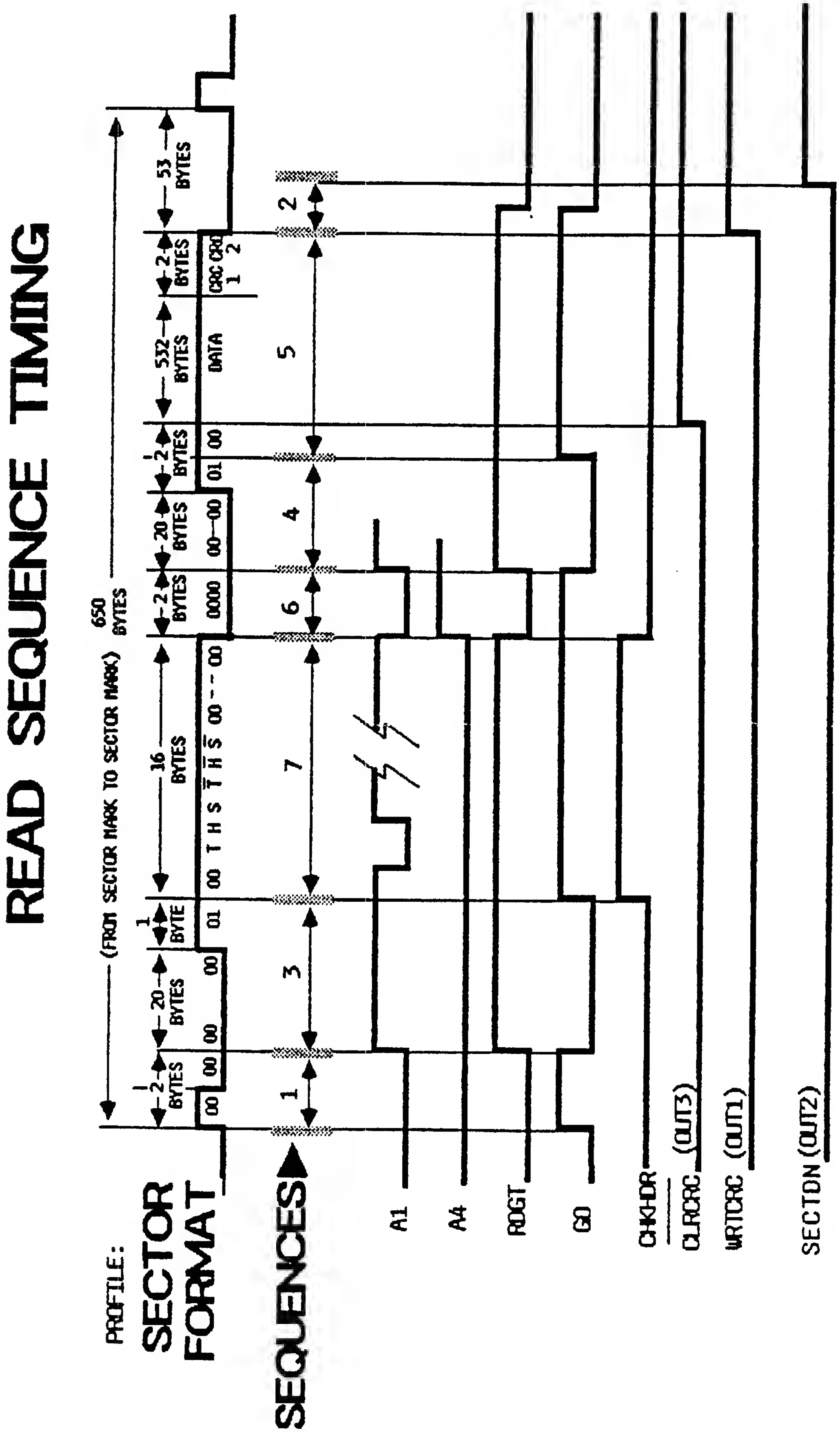
    The Z8 then knows it has faulty data, and will perform an error recovery routine. (For more information on the error recovery routines used in the Pro-File's firmware, refer to the Appendices section of this manual.)

23. The OUT1 register is also decremented by the second byte in the data field, bringing its contents to 534.

    After the remaining 532 bytes of data, and the two CRC bytes are read from the data field, the OUT1 register completes its count causing:

    a. The CRC Generator/Checker U35 to freeze its status.

    b. The State Machine to generate ENDCOUNT and advance to sequence 2.


READ SEQUENCE TIMING
PROFILE:
SECTOR FORMAT
SEQUENCES
650 BYTES
(FROM SECTOR MARK TO SECTOR MARK)
2 BYTES
20 BYTES
1 BYTE
16 BYTES
2 BYTES
20 BYTES
2 BYTES
532 BYTES
2 BYTES
53 BYTES
00
00 00
00
01
00 T H S T̄ H̄ S̄ 00 - - 00
0000
00—00
01
00
DATA
CRC 1
CRC 2
1
3
7
6
4
5
2
A1
A4
RDGT
GO
CHKHDR
CLRCRC (OUT3)
WRTCRC (OUT1)
SECTON (OUT2)

24. Sequence 2's purpose is to hold the Read/Write Control Logic in a static state until the Z8 is finished processing the CRC status. This happens when OUT2 decrements to 0, causing the State Machine to output the SECTDN pulse.

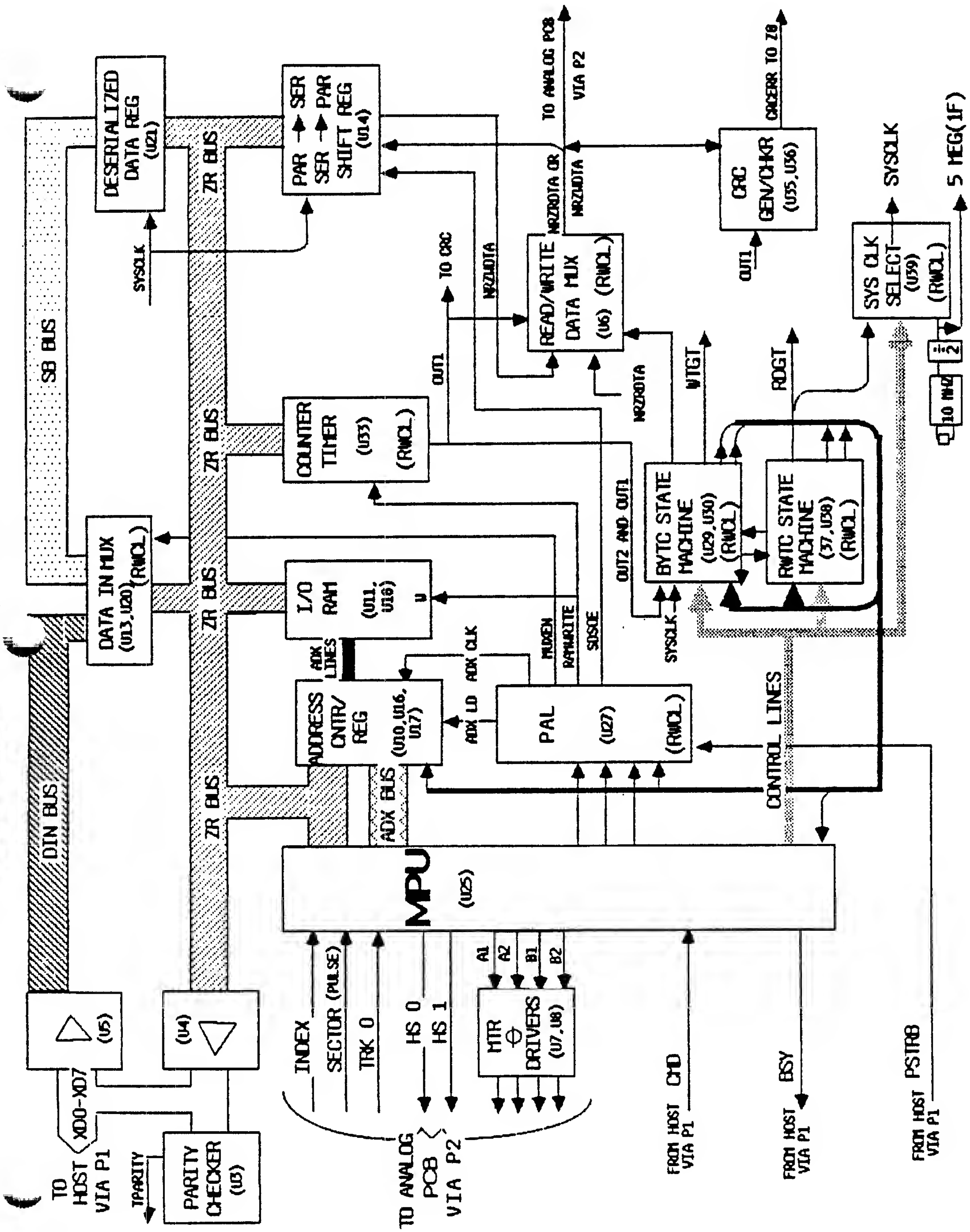
    This pulse accomplishes two functions:

    a. It resets the Programmable Counter/Timer (U34).

    b. It goes to pin 31 of the Z8.

    When the Z8 receives the SECTDN pulse, it samples the CRC status from U35 and, when finished processing, lowers the START signal, causing the Read/Write Control circuitry to reset to sequence 0.

CONTROLLER PCB BLOCK DIAGRAM



### 3.2.1 Write Operation General Explanation

There are 3 handshakes for the Write or Write/Verify operations.

After completing the Command Handshake (the first handshake), the Z8 conditions the Controller PCB logic to accept a block of write data from the Host.

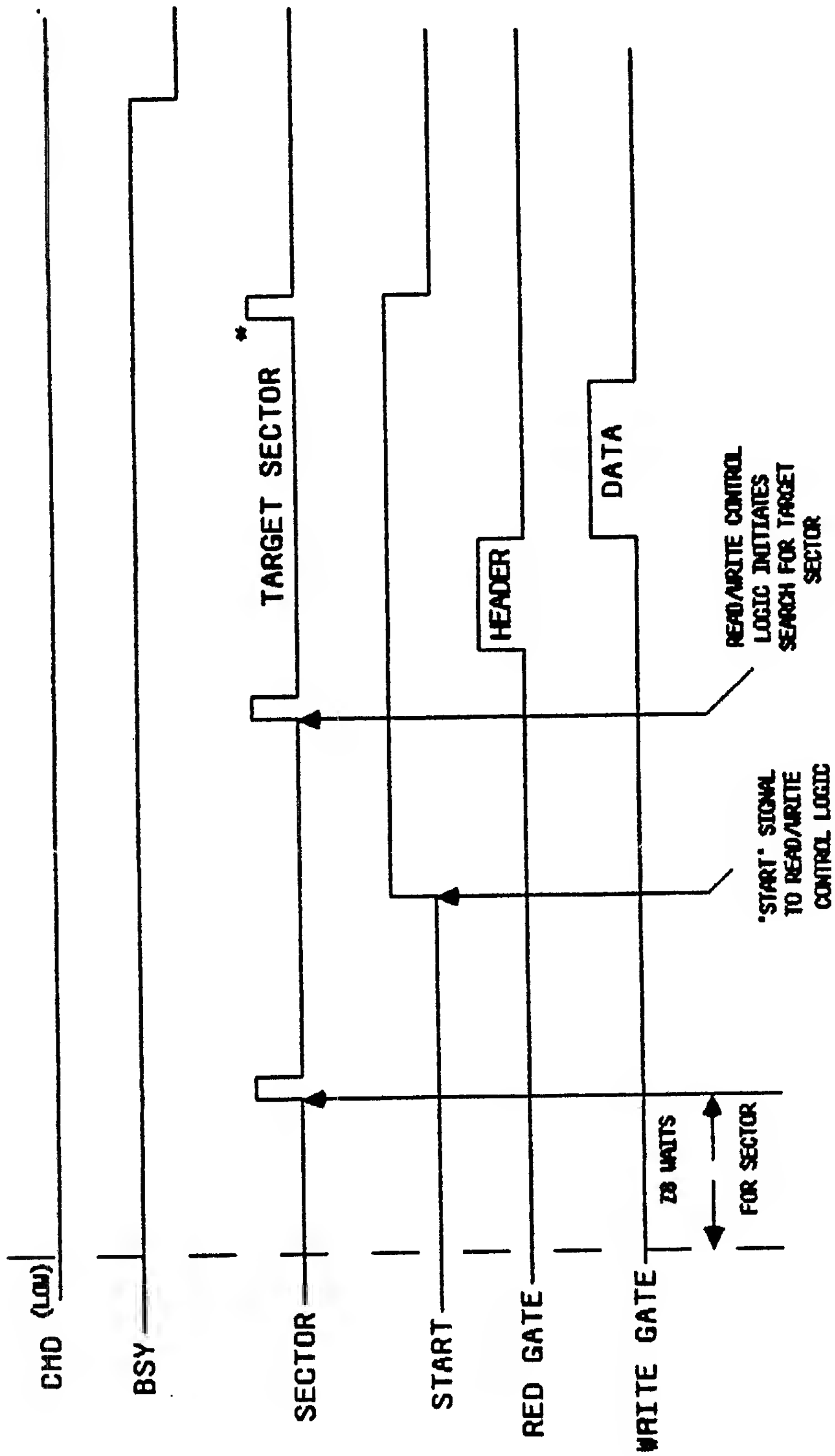
During the second handshake, the Host strobes each byte of data into the RAM with PSTRBs.

Then the Z8 and Read/Write Control Logic read the parallel write bytes out of the RAM to the Serial/Deserial Shift Register U14. U14 is then enabled to shift these bytes out in serial to the Analog PCB.

During a Write operation the WTGT signal enables the Analog PCB to convert this serial NRZ data to MFM data and then to an analog signal to be written on the disk surface. Once the Write is complete the Pro-File will go through yet another handshake.

The third handshake allows the Pro-File to send the completion status for the operation back to the Host.

# WRITE TIMING




* THIS SECTOR PULSE IS TEMPORARILY SUPPRESSESBY WRITE OPERATION.

**Refer to the Controller PCB schematic at the end of this section for the following discussion.**

### 3.2.2 Write Operation Component Explanation

The following discussion explains the Write operation only so far as it differs from the Check Header function.

1. As can be seen in the State Machine Sequence diagram following sequence 7 (the end of the Check Header function), if DRW is low (indicating the command bytes from the Host specified a Write operation), and A4 goes high (indicating all 16 bytes of the sector header field have been checked) the State Machines will advance to sequence 5.

2. Sequence 5 will generate either RDGT or WTGT depending on the level of DRW. IF DRW is low, that means the command bytes from the Host stipulated a Write operation so WTGT will go high.

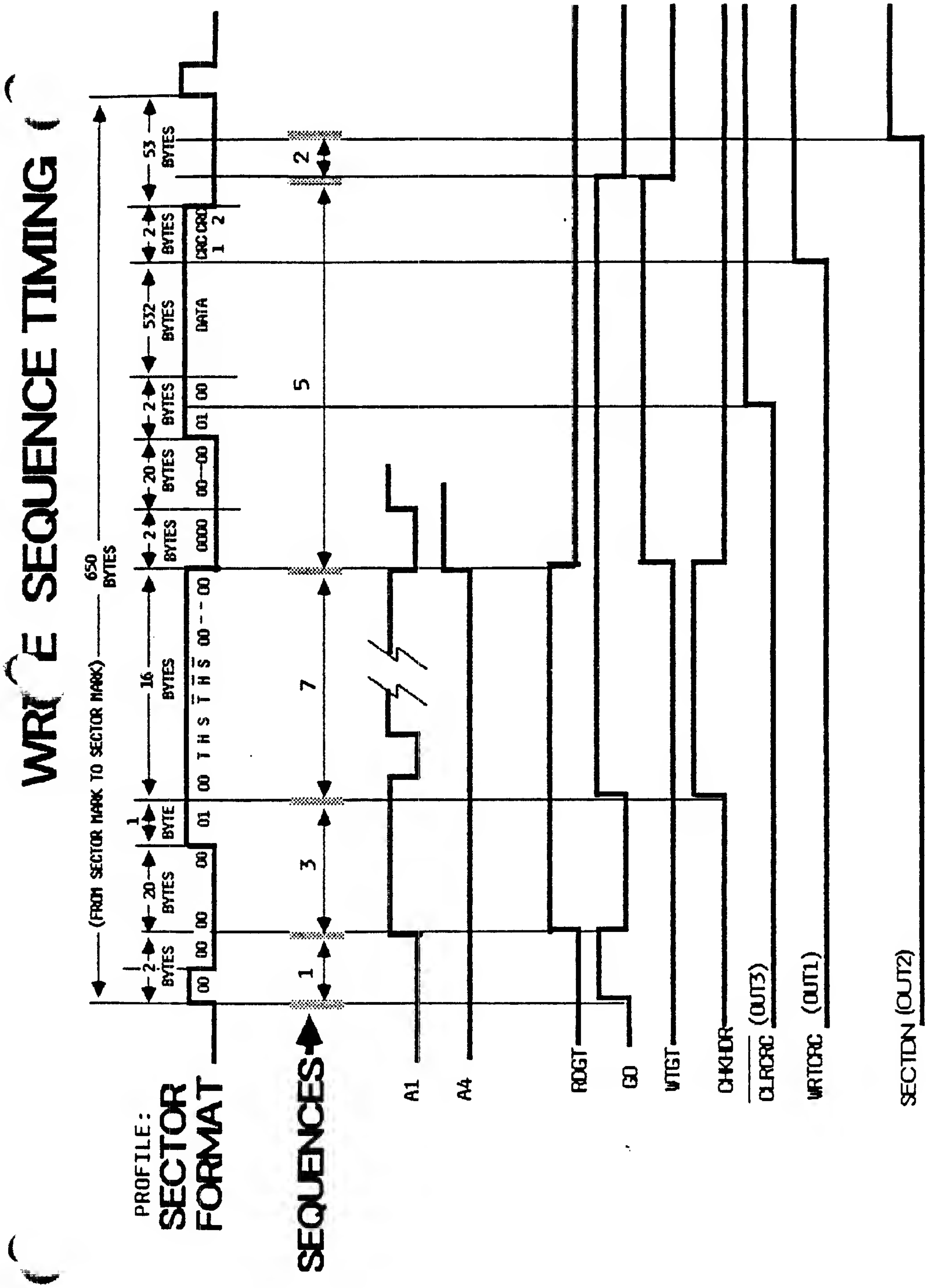
   If DRW were high RDGT would occur. Sequence 5's purpose during a Write is to read the parallel write data out of RAM (this data was sent to the Pro-File during the second handshake of a Write operation), convert it to serial NRZ write data, and send it to the Analog PCB in sync with the system clock from the crystal oscillator.

3. Because RDGT is not being generated the System Clock Selector U31, and U32 will select the output from the crystal oscillator to use as the system bit clock for the rest of the Write operation.

4. The WTGT signal, pin 5 of U30, is generated by the State Machine as a result of being in sequence 5. This signal goes to the Analog PCB to enable it to convert the serial NRZ write data to serial MFM data, and then to an analog signal for the selected head to store on the disk surface.

6. After sequence 7 the Address Counters will be set to the RAM address of the first byte in the data block to be written.

   The write data block in RAM is composed of 22 bytes of zeroes, then a sync byte containing a 1, then another zero byte, and then 532 bytes of data. During sequence 5, each write byte is read sequentially from the RAM.


WRI E SEQUENCE TIMING
PROFILE:
SECTOR FORMAT
SEQUENCES
(FROM SECTOR MARK TO SECTOR MARK)
650 BYTES
2 BYTES
20 BYTES
1 BYTE
16 BYTES
2 BYTES
20 BYTES
2 BYTES
532 BYTES
2 BYTES
53 BYTES
00
00 00
00
01
00 T H S T̄ H̄ S̄ 00 - - 00
0000
00—00
01 00
DATA
CRC CRC 1 2
1
3
7
5
2
A1
A4
RDGT
GO
WTGT
CHKHDR
CLRCRC (OUT3)
WRTCRC (OUT1)
SECTDN (OUT2)

7. Because the State Machine is in sequence 5, the Divide-by-8 Counter U22 will be enabled by the high GO signal to count system bit-clocks (since RDGT is low the System Clock Selector U39 will select the clocks from the Controller PCB crystal oscillator).

   Each QC output from the Divide-by-8 Counter U22 will produce an LSDS output from pin 12 of U29 in the State Machine to pin 19 of the Serial/Deserial Shift Register U14 enabling it LOAD a byte of write data from the ZR bus. As can be seen on the State Machine Phase diagram (shown in the Check Header function circuit description) LDSDS occurs at phase 7 of a byte to load the next byte from the bus.

8 In sequence 5 the RWTC State Machine will produce SSTRBs from pin 15 of U38. This happens once per byte as a result of the inputs from the Divide-by-8 Counter U22.

9. As can be seen on the State Machine Phase diagram, SSTRBA will be generated at phase 1 following the generation of LDSDS. And so the SSTRBA signal increments the Address Counters U16, U17, and U10 after the Serial/Deserial Shift Register U14 has accepted one from the ZR bus.

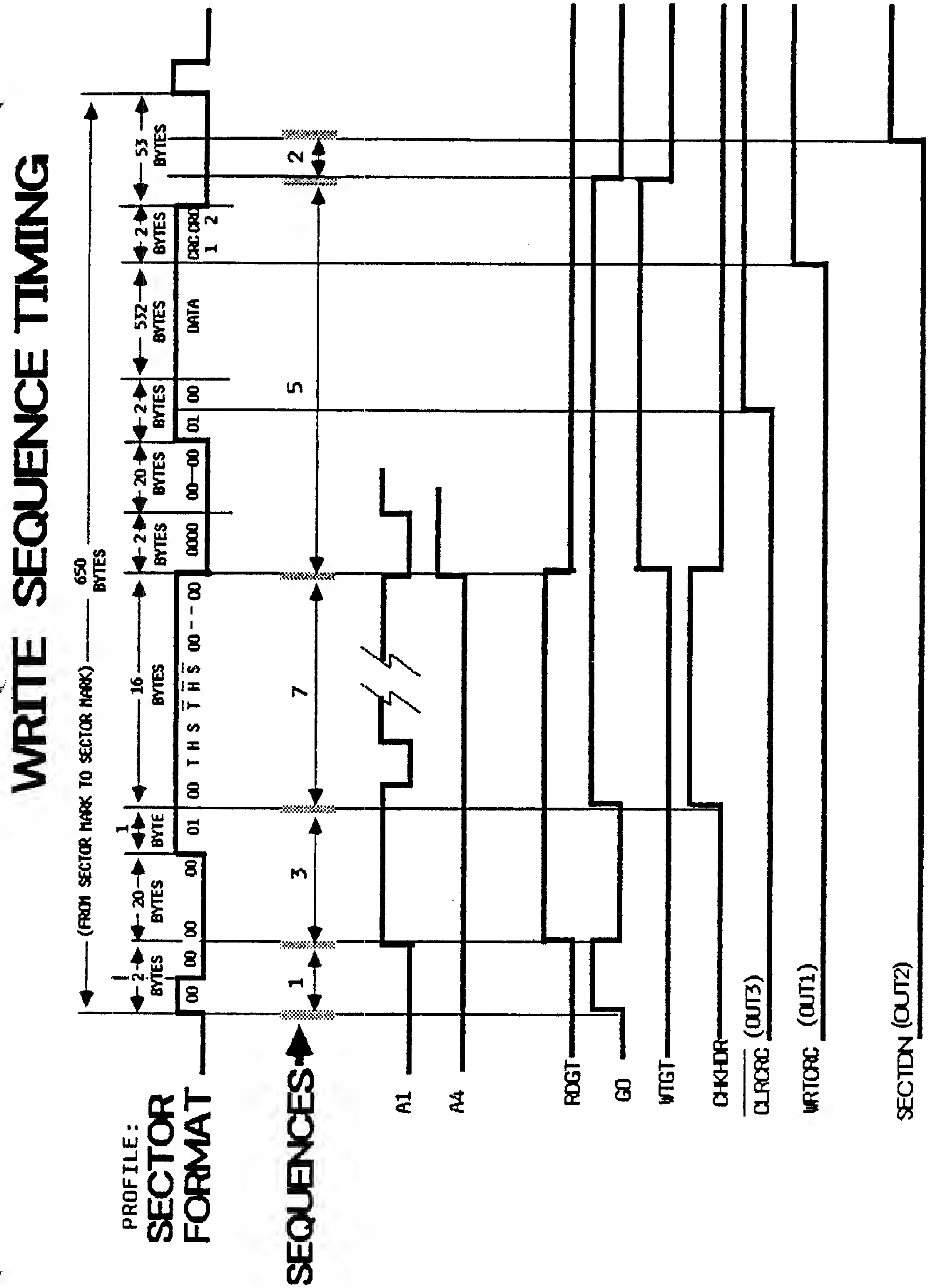
10. Prior to sequence 5 of the Write operation, during the Check Header function, the Z8 reprogrammed the Programmable Counter/Timer (U34) such that:
    a. OUT1 register contained 573.
    b. OUT2 register contained 575.
    c. OUT3 register contained 39.

    Programmable Counter/Timer (U34) is enabled to decrement all of its registers each time an SSTRB occurs, but only while GO is high.

    During the sequences of the first part of the Write operation (including the Check Header function), each of these registers was decremented by the following amounts.

| Sequence | Amounts |
|---|---|
| 1 | 2 |
| 7 | 16 |

    This brings the amounts in each register to:
    a. OUT1 register contains 555.
    b. OUT2 register contains 557.
    c. OUT3 register contains 23.


WRITE SEQUENCE TIMING
PROFILE:
SECTOR FORMAT
SEQUENCES
(FROM SECTOR MARK TO SECTOR MARK) 650 BYTES
2 BYTES
20 BYTES
1 BYTE
16 BYTES
2 BYTES
20 BYTES
2 BYTES
532 BYTES
2 BYTES
53 BYTES
00 00 00 00 01 00 T H S T̄ H̄ S̄ 00 - - 00 0000 00—00 01 00 DATA CRC CRC 1 2
1 3 7 5 2
A1
A4
RDGT
GO
WTGT
CHKHDR
CLRCRC (OUT3)
WRTCRC (OUT1)
SECTION (OUT2)

**CRC Operation**

11. After the 22 sync bytes (which were zero's), and the "one" sync byte (which was a one), have been read out of RAM the OUT3 register will be decremented to 0, and the OUT1 register to 532.

    The OUT3 register reaching 0 causes a high from pin 15 of U34, removing the high Reset signal to pin 4 of U35 the CRC Generator/Checker. This chip is now enabled to process write data bits to produce 2 unique CRC bytes for the 532 bytes in the data field.

12. Meanwhile the Read Data MUX U6 is enabled by the high WTGT signal to select the serial output of the Serial/Deserial Shift Register U14 at pin 19.

    This serial write data is sent up to pin 11 of the CRC Generator/Checker U35. When 532 bytes have been counted, the OUT1 output from the Programmable Counter Timer U33 goes high causing the FRZN/WRTCRC signal to pin 5 of U28.

NOTE: Although the 3 U28 gates inputting to the CRC circuit are shown to be exclusive Ors, they are being used as inverters.

13. The resultant low on pin 10 of U6 causes the CRC Generator/Checker U35 to change modes to freeze the CRC generator, and clock out the 2 CRC bytes as NRZ Write data.

14. The OUT1 signal also goes to pin 19 of the BYTC State Machine to produce ENDCOUNT causing the State Machine to produce SECTDN and advance to sequence 2.

15. SECTDN goes to pin 31 of the Z8 to tell it that the processing of the sector is finished, and sequence 2 simply holds the Read/Write Control circuitry until the Z8 can process the SECTDN signal and drop the START signal. Otherwise spurious data could be stored in RAM.

### 3.3.1 Write/Verify Operation General Explanation

The Write/Verify operation is a combined Write and Read. The data comes from the Host in the same way as it does for a Write.

When the Write opereation is complete the Z8 goes through a verification of the data written, much like a Read operation.

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# ANALOG PCB

## 1. General Explanation of the Analog PCB Write Circuits

For the following discussion refer to the Overall Block Diagram of the Analog PCB on the opposite page.

The Analog PCB serves as the interface between the Controller PCB and the Seagate HDA.

It consists of two main parts **Write** circuitry and **Read** circuitry.

The one Head Selector is shared for both Read and Write.

The Write circuitry consists of the following circuits:

a. Non-Return to Zero () to Modified Frequency Modulation (MFM) Write Encoder and Data Precompensater.

b. Write Driver.

c. Head Select Matrix.

### 1.1 NRZ to MFM Write Encoder and Data Precompensater Circuits

Prior to any operation (Write or Read), the Z8 on the Controller PCB sends the head select matrix inputs to cause it to select one of the four heads (disk surfaces).

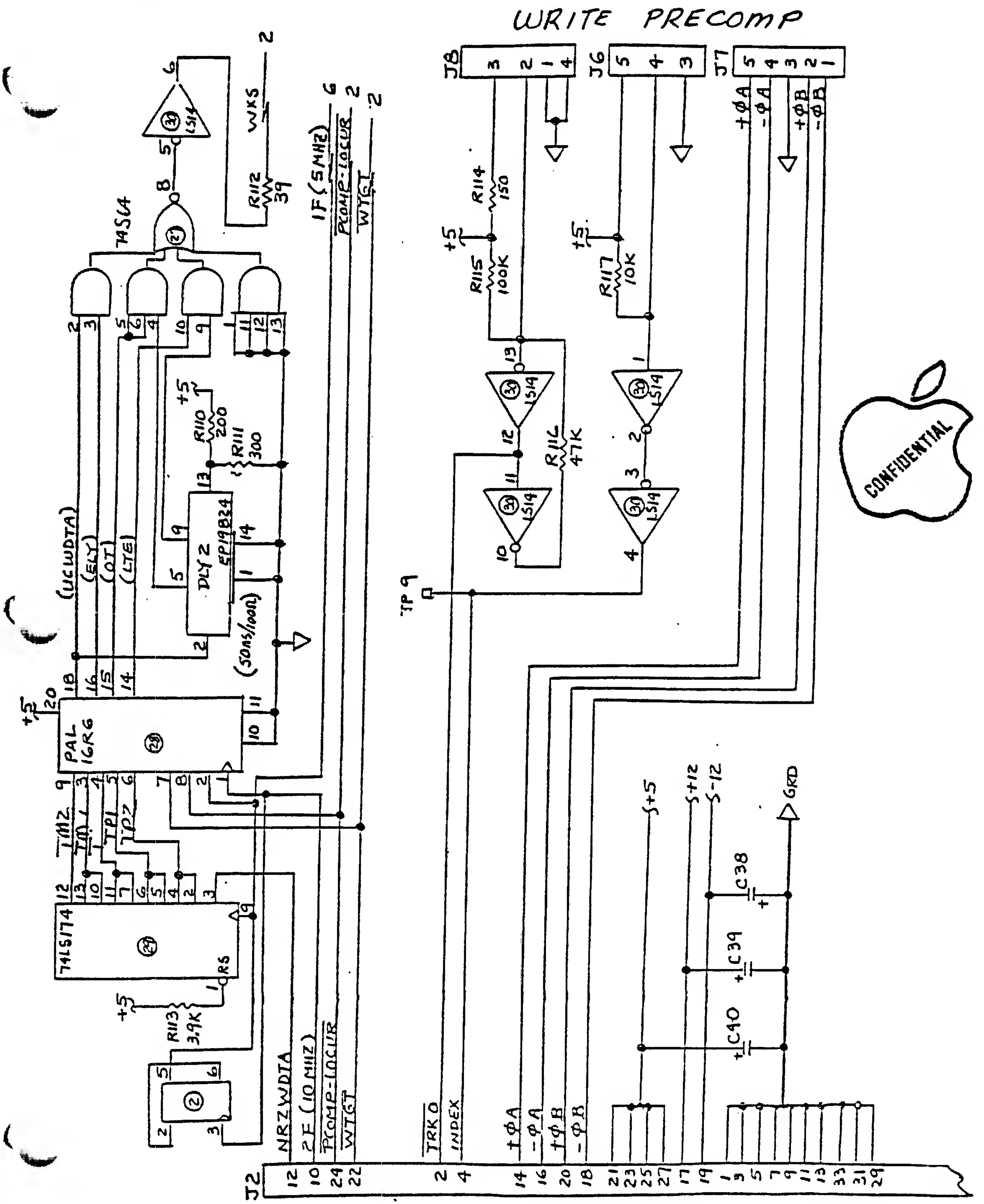
During a Write operation, serial NRZ WRTDATA (Non Return to Zero simply means the data signal will be high when a one and low when a zero with no clocks) is converted to MFM data by the MFM Encoder/Precompensator. (For information on Modified Frequency Modulation refer to the MFM explanation at the end of this discussion.)

The Write Driver converts the MFM write pulses to alternating head current on the selected head.

If the data is being written on an inside track (tracks 128 to 152), the MFM write transitions will be peak shift precompensated, and the Write current will be reduced from 24 ma to 19 ma.

The Write Driver and Head Select Matrix are covered in more detail later.

For information on Write Precompensation refer to the Write Precompensation explanation at the end of this discussion.


WRITE PRECOMP
J8
J6
J7
J2
PAL 16R6
74LS174
74S64
DLY 2
EP19824
(50ns/100n)
R110 200
R111 300
R112 39
R113 3,9K
R114 150
R115 100K
R116 47K
R117 10K
TP 9
NRZWDTA
2F (10MHZ)
PCOMP-LOCUR
WTGT
1F (5MHZ)
WKS
TRK0
INDEX
+ΦA
-ΦA
+ΦB
-ΦB
+5
+12
-12
GRD
C38
C39
C40
(UCWDTA)
(ELY)
(OT)
(LTE)
CONFIDENTIAL

## 2. Component Explanation of the Analog PCB Write Circuits

Refer to the diagram on the opposite page for the following discussion.

Some minor component value changes exist from this drawing to the production version. But, the illustration should be adequate for training purposes. The component population of the Write circuitry is quite small. However, the PAL (programmed array logic-U28) makes up for that by having a large amount of logic.

### 2.1 Clocking-

The 10MHz 2F signal is the master clock frequency from the crystal oscillator on the Controller PCB. It is divided to 1F (5MHz) by U2 (a simple divide-by-two stage). The 1F signal is the bit shift clock for the precompensation shift register. It is also used to keep the VCO synchronized to write data during the Write operation. The 2F signal provides the clock enable signals necessary to perform precompensation on the data as it is output from the PAL.

### 2.2 Precomp Shift Register U29

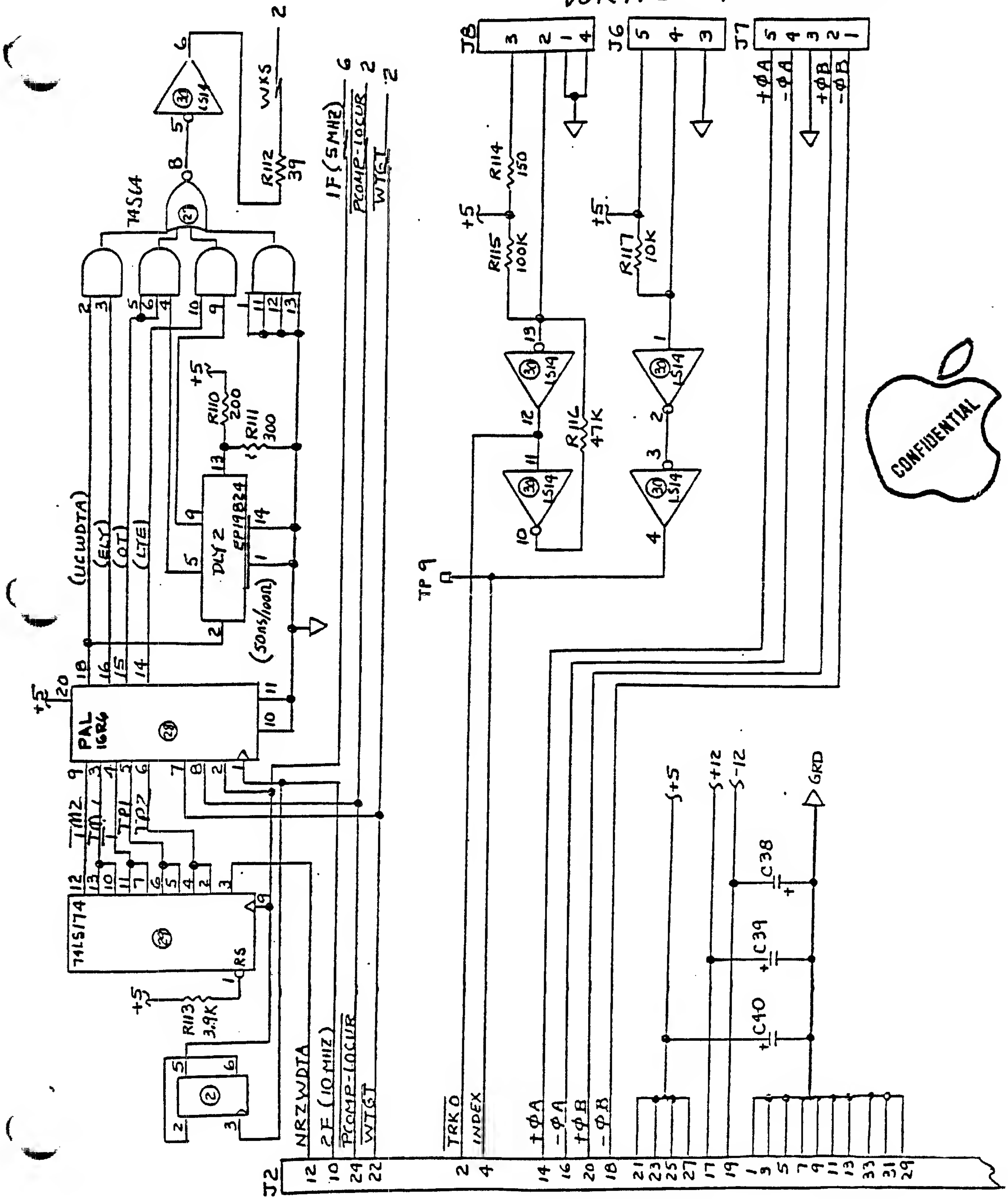
U29 has been externally wired into a shift register. Its output shift pattern provides five of the inputs to the PAL.

For clarity, the following is a sketch of U29 and its signals with the "in's" on the left and the "out's" on the right.

```
                     ---------
        TM1 --13---!d5    q5!---12--TM2
                   !        !
          T --11---!d4    q4!---10--TM1
                   !        !
         TP1--6----!d3    q3!---7--- T
                   !  U29   !
         TP2--4----!d2    q2!---5---TP1
                   !        !
    NRZWDTA---3----!d1    q1!---2---TP2
                   !        !
                     ---------
```

It makes things easier if you visualize the data stream in reference to the bit named "T". The TMx signals are what T was one or two clocks ago, and the TPx signals are what T will be in one or two clocks. The initial NRZ data is clocked into q1, the next clock places q1 at q2, and so forth. The whole intent is to give the PAL a window on the data stream to make the encoding and the early/late/ontime precompensation decisions discussed earlier.

WRITE PRECOMP



**2.3 PAL Chip U28**
U28 is a custom array of logic designed specifically for this circuit. It consists of a huge array of AND/OR gates feeding each D input of its output register.

The PAL chip is involved in two functions:

1. To convert the NRZ digital stream into a stream of pulses conforming to the rules of MFM as stated earlier.

2. To provide the gating signals to advance, retard or leave alone the stream of write data pulses called "UCWDTA" (uncompensated).

As a bit is being processed through the PAL chip, its internal array of AND/OR gates receives inputs from the Precomp Shift Register U29, telling the PAL which bit combinations surround that bit.

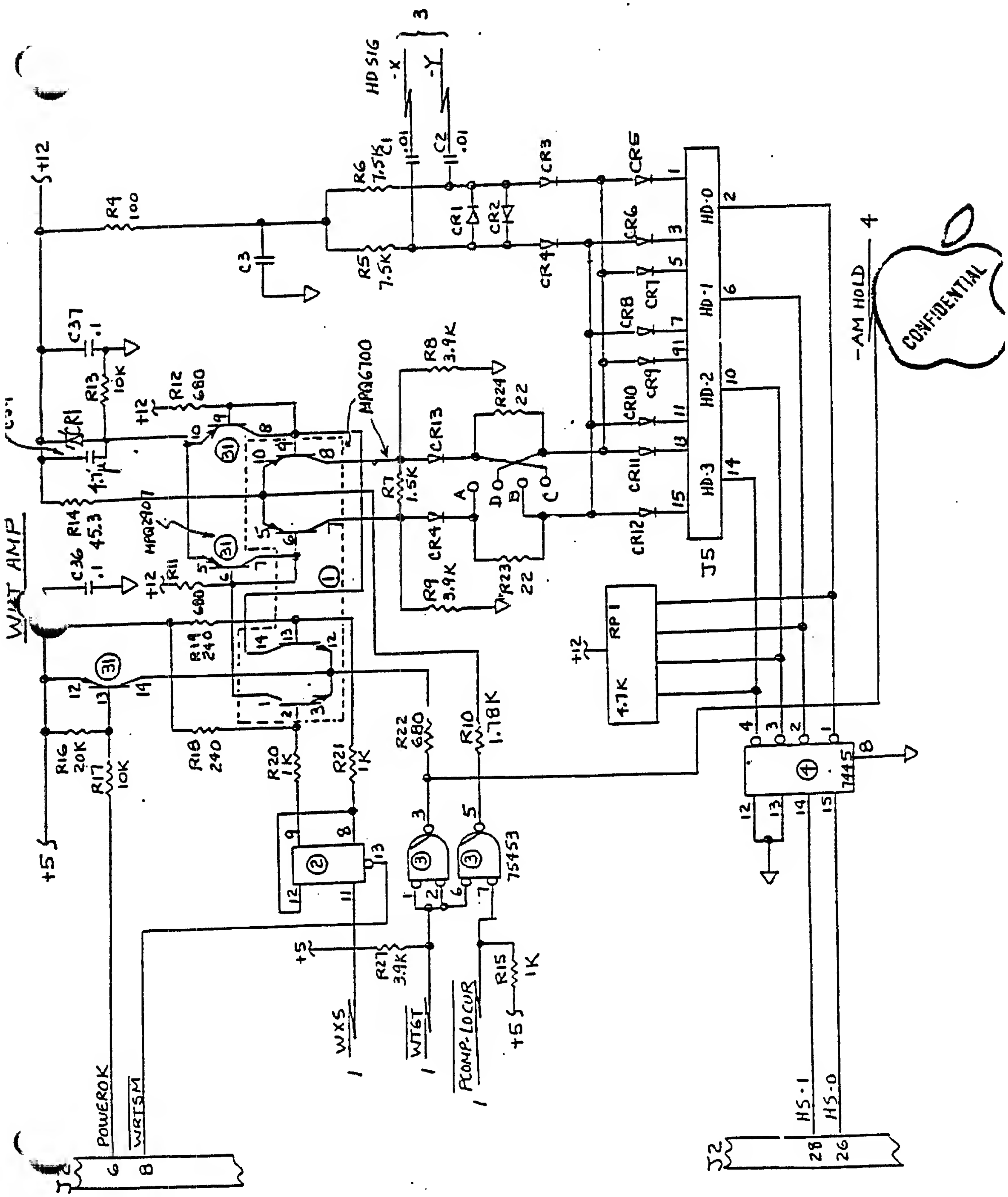
This enables the PAL to determine when to generate a transition to convert it to MFM data and what type of precompensation (if any) to provide.

**2.4 Precompensation Gating U27**
UCWDTA goes to the input of a gate enabled with ELY (Early) and to a delay line DLY2, which delays the pulses approximately 15 ns per stage. The outputs of the delay line are partial enables to the OT (Ontime) and LTE (Late) gates respectively.

If there is no precompensation, (such as when writing to the outer tracks), the signal OT gates the first delayed data line to the WXS line.

If precomp'ing determines that the data transition needs to be advanced, then the ELY signal will gate UCWDTA to the WXS line; and if the signal needs to be retarded, the signal LTE will gate the second delay of data to the WXS line.

DLY2 provides the amount of delays needed for each type of precompensation. Only one signal (UCWDTA, ELY, OT, or LTE) can be true at any one time.


HD SIG
-X
-Y
+12
R4 100
R6 7.5K
R5 7.5K
C1 .01
C2 .01
C3
CR1
CR2
CR3
CR4
CR5
CR6
CR7
CR8
CR9
CR10
CR11
CR12
CR13
HD-0
HD-1
HD-2
HD-3
J5
-AM HOLD
CONFIDENTIAL
C37 .1
R13 10K
R12 680
MPQ6700
MPQ2907
R8 3.9K
R24 22
R7 1.5K
R9 3.9K
R23 22
R14 45.3
C36 .1
R11 680
WRT AMP
R19 240
R18 240
R16 20K
R17 10K
R20 1K
R21 1K
R22 680
R10 1.78K
RP1
4.7K
7445
75453
R27 3.9K
R15 1K
+5
WXS
WTGT
PCOMP.LOCUR
POWEROK
WRTSM
J2
HS-1
HS-0

**2.4 Precompensation Gating U27** (continued)
The following timing diagram might help make this more clear.

```
UCWDTA  .....'''''.....'''''..........'''''..........'''''.....'''''...
DLY (5) ......'''''.....'''''..........'''''..........'''''.....'''''..
DLY (9) .......'''''.....'''''.........'''''..........'''''.....'''''.
OT      .....'''''....................'''''............................
ELY     ...............'''''..................................'''''....
LTE     .............................................'''''.............

WXS(precmp) ......''''.....'''''..........''''...........'''.....'''''
WXS(norm)   ......''''......''''..........''''..........''''......''''
```

NOTE: this diagram is for training purposes and does not necessarily conform to the rules of precomp....OK?

The leading edge of the WXS signal is the working edge that toggles the WXS FF. The slight shift of timing between the precomp and unprecompensated signal is enough to increase Read data recovery by several magnitudes.

**2.5 Miscellaneous Circuits U30**
These drivers shape the TRACK 0 sensor signal and the INDEX pulse from the HDA. The Track 0 circuit forms a noise latching function too (the source signal is pretty ragged).

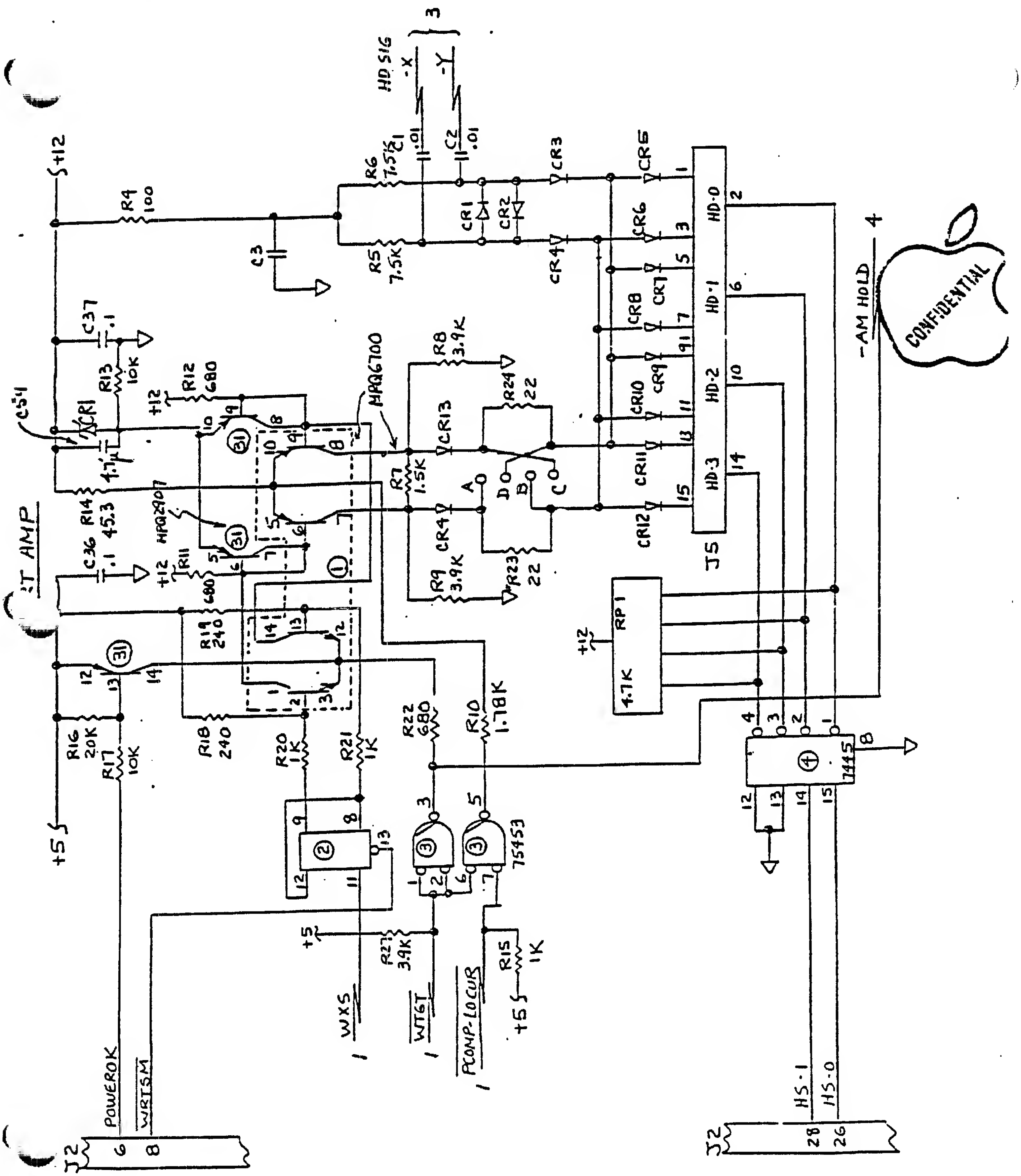
**2.6 Write Current Gating U1, U2, U3, U31**
Each WXS pulse from the precomp gating circuit toggles the WXS FF, U2. The result is a divide by two function.

The output levels of the WXS FF are level shifted by the first set of transistors in U1.

The remaining transistors comprise a constant current-switching network. These transistors are turned on and off depending on the state of the WXS FF.

During Formatting, at the end of every sector the Z8 on the Controller PCB directs the Analog PCB to write a sector mark. It does this by putting a constant low on pin 13 of the WXS FF to clamp it in the reset state for a 10-byte period.

Each time this happens, the heads output a DC level (no transitions) for a field (10 bytes long), creating a sector mark.



**2.6 Write Current Gating** (continued)
A string of zeros would not create the DC level because they would be converted by the MFM encoder to a 5 MHz signal at the heads.

The Z8 causes WTGT to go low and turns on the current switching circuit when it wishes to perform a Write operation.

WTGT (Write Gate), when inactive (high), kills both sides of the level shifter and, therefore, turns off both sides of the current source, effectively killing all write current.

The signal $\overline{\text{PRECOMP-LOCUR}}$ is produced by the Z8 to cause a reduction of write current to the heads when writing to the inner tracks (128 to 152).

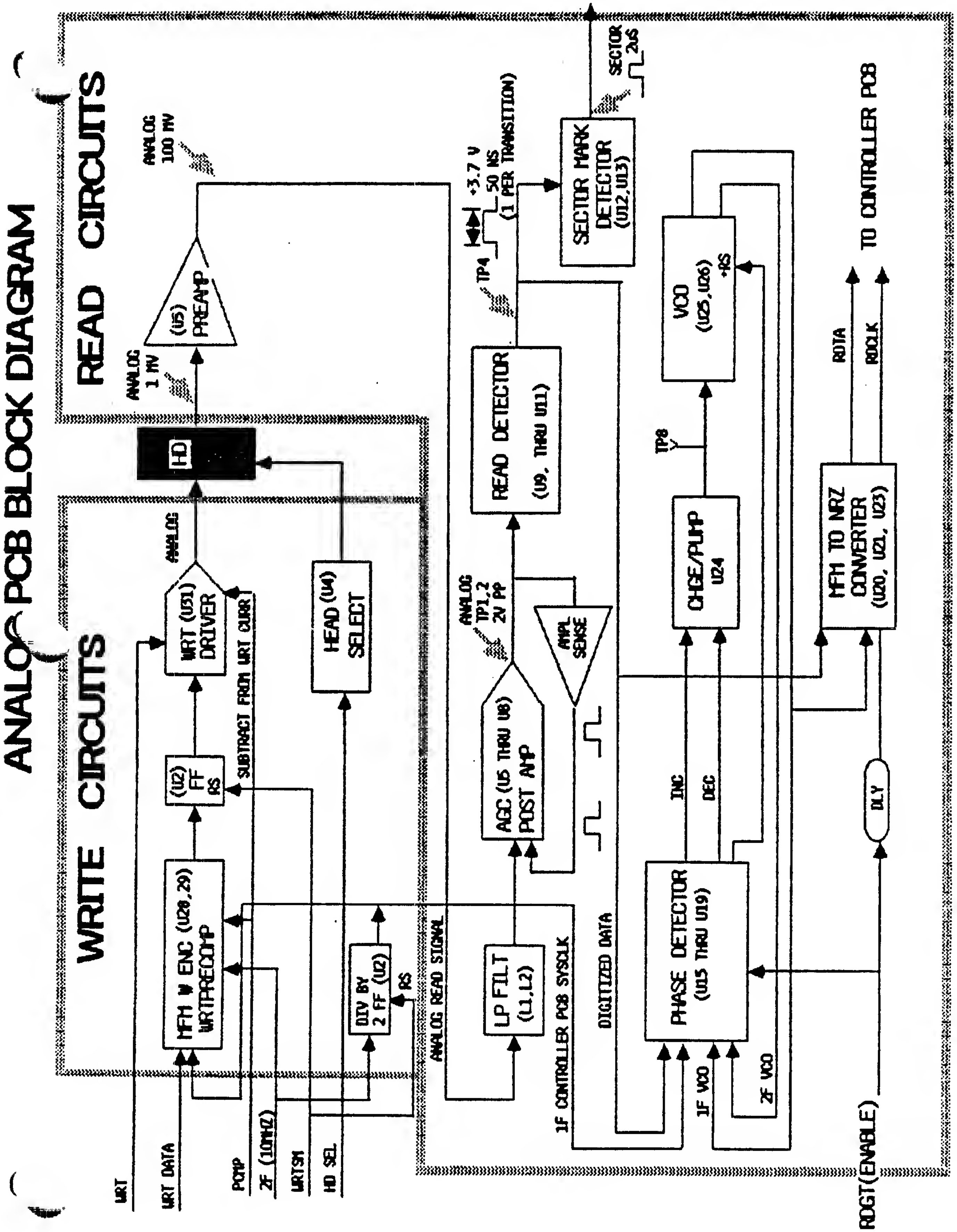
Normal write current is about 24 ma. But, in the inner tracks it is reduced to slightly less than 20 ma because the bits are packed closer together.

The POWEROK signal is generated by the power supply. If it goes low that means that the power supply has detected a power problem.

If the POWEROK signal does go low, this biases pin 13 of a transistor in U31 to turn it on inhibiting any write from taking place.

**2.7 Head Selection U4**
Head selection is done by U4 (7445, one of ten decoder). The signals HS0 and HS1 are code outputs from the Z8 to select the proper head (00 selects head 0, 01 selects head 1, 10 selects head 2, and 11 selects head 3).

Only one head can be selected at a time. The heads are center tapped, and the center is connected to the 7445 to create a current path for Reading or writing.


ANALOG PCB BLOCK DIAGRAM
READ CIRCUITS
WRITE CIRCUITS
ANALOG 100 MV
ANALOG 1 MV
(U5) PREAMP
HD
ANALOG
WRT (U31) DRIVER
SUBTRACT FROM WRT CURR
HEAD (U4) SELECT
(U2) FF RS
MFM W ENC (U28,29) WRTPRECOMP
DIV BY 2 FF (U2)
RS
ANALOG READ SIGNAL
LP FILT (L1,L2)
AGC (U5 THRU U8) POST AMP
ANALOG TP1,2 2V PP
AMPL SENSE
READ DETECTOR (U9, THRU U11)
TP4
+3.7 V
50 NS (1 PER TRANSITION)
SECTOR MARK DETECTOR (U12,U13)
SECTOR 2uS
1F CONTROLLER PCB SYSCLK
DIGITIZED DATA
PHASE DETECTOR (U15 THRU U19)
INC
DEC
1F VCO
2F VCO
CHGE/PUMP U24
TP8
VCO (U25,U26)
+RS
MFM TO NRZ CONVERTER (U20, U21, U23)
DLY
RDTA
RDCLK
TO CONTROLLER PCB
WRT
WRT DATA
PCMP
2F (10MHZ)
WRTSM
HD SEL
RDGT(ENABLE)

## 3. GENERAL EXPLANATION OF THE ANALOG READ CIRCUITRY

The following circuits are included in the Read circuitry:

1. Preamplifier and Automatic Gain Control (AGC).

2. Read Detector and Sector Mark Detector.

4. Phase Locked Loop (PLL) consisting of:

   a. Phase Detector.
   b. VCO Charge Pump.
   c. Voltage Controlled Oscillator.

5. MFM to NRZ Read Decoder.

During a Read operation, the preamplifier amplifies the low level (.6 to 2.0 mV) signal from the selected head to a 200 mV.

The analog read signal is then filtered and amplified to a fixed 1.0 V output signal by the AGC circuit.

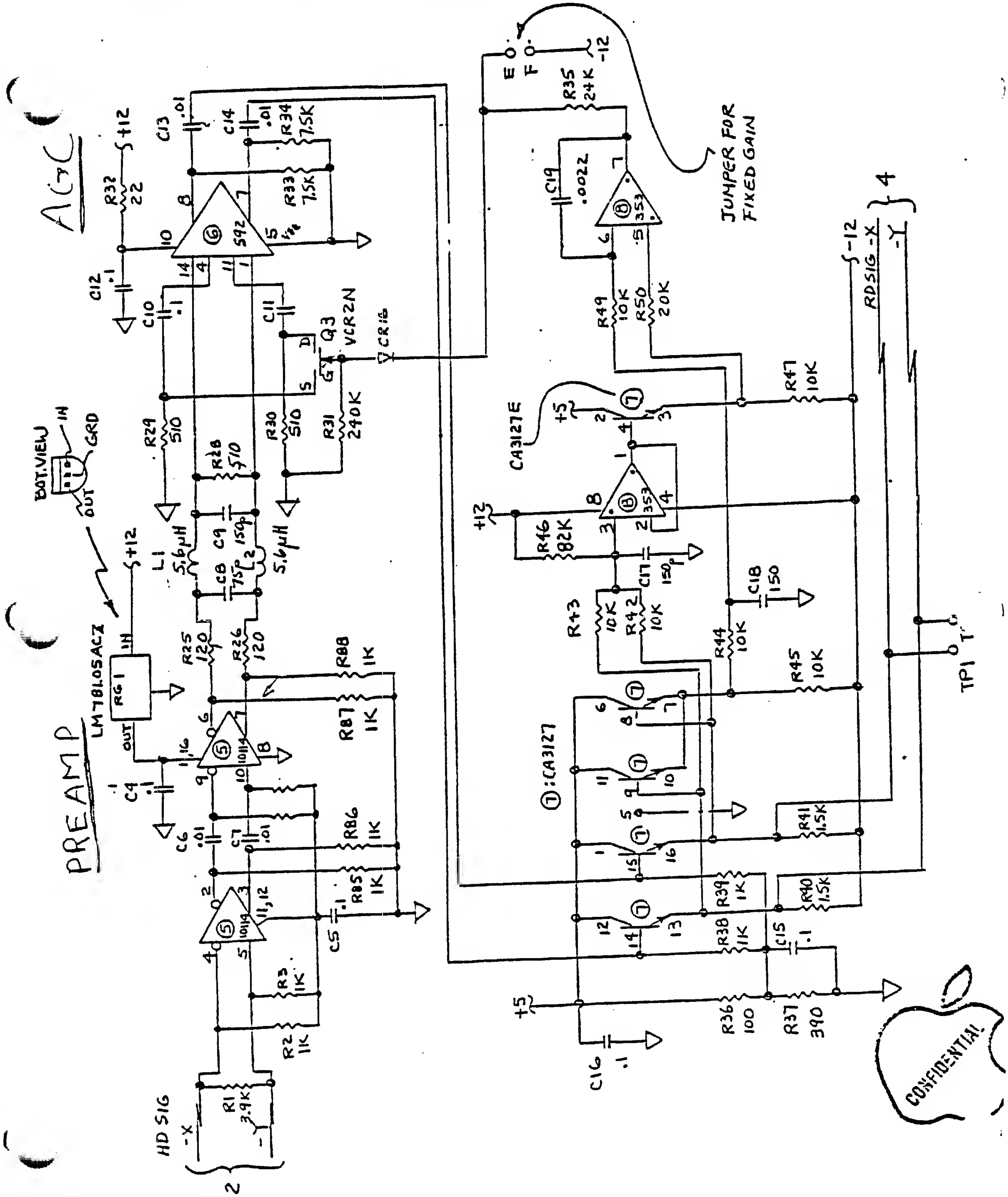
This analog read signal is fed to the differentiator and gated detector to derive the MFM read pulses.

The PLL (Phase Lock Loop) synchronizes its VCO to the MFM read pulses and provides the clock for the MFM to NRZ data converter.

The serial NRZ data and clock are sent back to the Controller for deserialization.

During format operation, when the initial sector identifier information is written on the disk, sector boundaries are written as DC-erased 10 byte fields.

During a Read operation, the sector boundary detector looks for the absence of Read signals for about 10 ms (to detect the DC-erased 10 byte field). When it detects one, it sends a sector pulse to the Z8 on the Controller PCB.


AGC
PREAMP
JUMPER FOR FIXED GAIN
LM78L05ACZ
CA3127E
HD SIG
RDSIG
TP1
CONFIDENTIAL

## 4. Component Explanation of the Analog Read Circuitry

### 4.1 Analog Preamplifier, and AGC (Automatic Gain Control) Circuits

The Read circuitry is always on. However, because of the amplitude of the write signal through the heads, it goes into saturation during the Write operation and does not reliably recover the data.

During Reading (not writing), the selected head develops a signal on the -x -y lines.

This signal is about 1 mv and cannot usually be seen with conventional techniques.

Probing dampens the signal and induces so much noise that the signal is obliterated. So don't expect to see data directly from the heads.

The read signals from the head are brought to the first stage preamplifier U5.

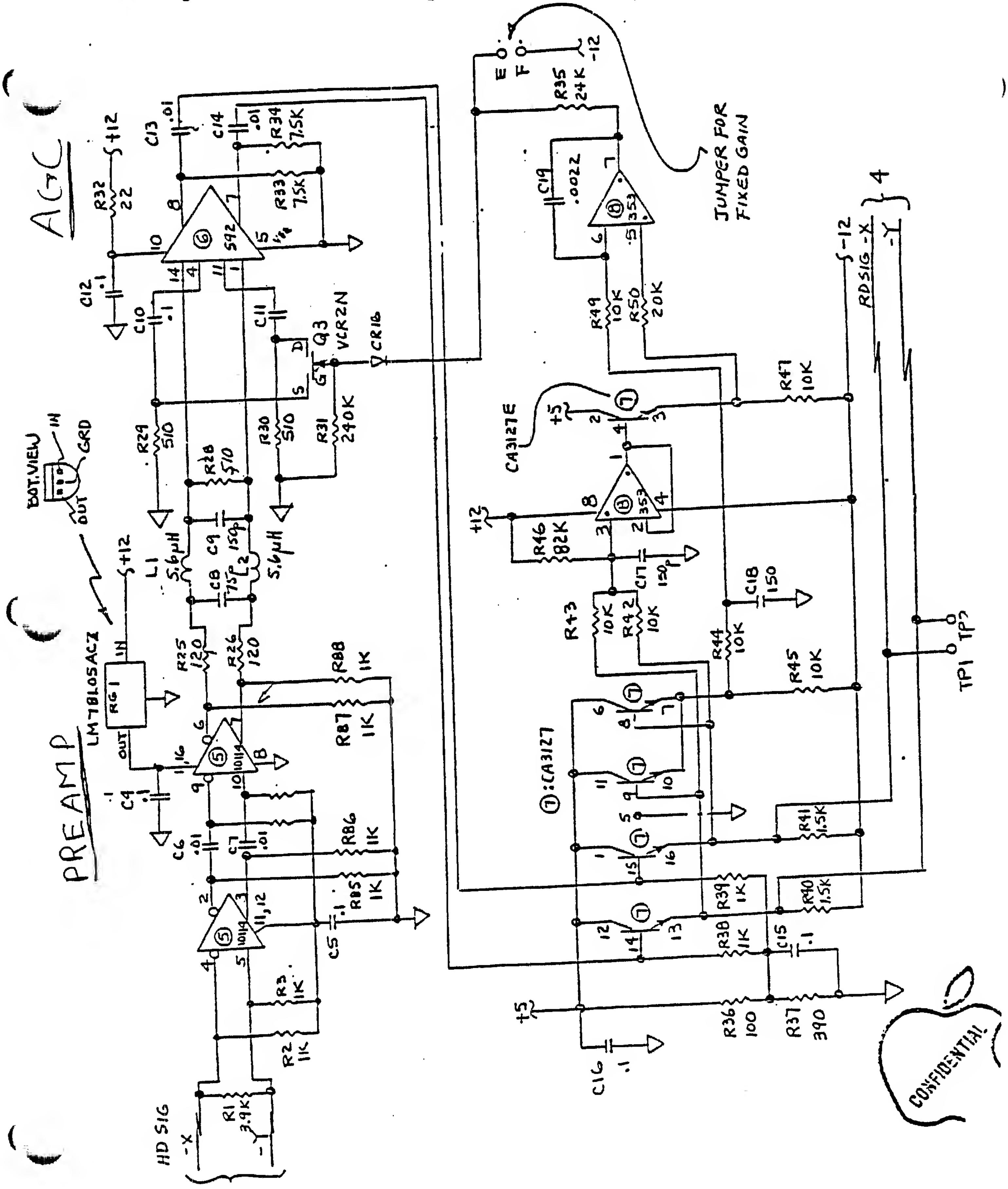
The devices used here are ECL (Emitter Coupled Logic), a high speed logic family. Each stage of the preamplifier has a gain of 12.

This means that the approximate 1 mV head signal leaves the first stage at about 18 mV. The signal is amplified again, and leaves this stage at about 200 mV.

That's nice because the filter network (L1, L2, C8, C9) attenuates the signal about 60%.

The analog read signal then enters the AGC (Automatic Gain Control) circuit. FET transistor Q3 controls the reference voltage to to the amplifier U6.

The input to the gate of Q3 comes from the final output of the AGC circuit.


AGC
PREAMP
JUMPER FOR FIXED GAIN
HD SIG
RDSIG
LM78L05ACZ
BOT. VIEW
IN
GRD
OUT
CA3127E
⑦:CA3127
TP1
TP2
CONFIDENTIAL

If the output goes up, the bias on Q3's gate will cause it to increase the reference voltage on pins 11, and 4 of U6. This will cause the output of U6 to decrease.

If the output from the AGC circuit goes down, the bias on Q3's gate causes it to decrease the reference voltage on pins 11, and 4 of U6. This causes the output of U6 to increase.

The result of this process is that the AGC circuit is continually striving to regulate the input from the heads into a constant output level.

However, it takes a certain amount of time for this regulation to take place. That is why if you monitor TP1 or TP2 on the Analog PCB while Reading, you will see an increase in signal amplitude at the beginning of each sector.

During a sector mark, there is little amplitude at pin 7 of U8 (the final output of the AGC circuit), so Q3 is conducting, putting the reference voltage for U6 at a very low level.

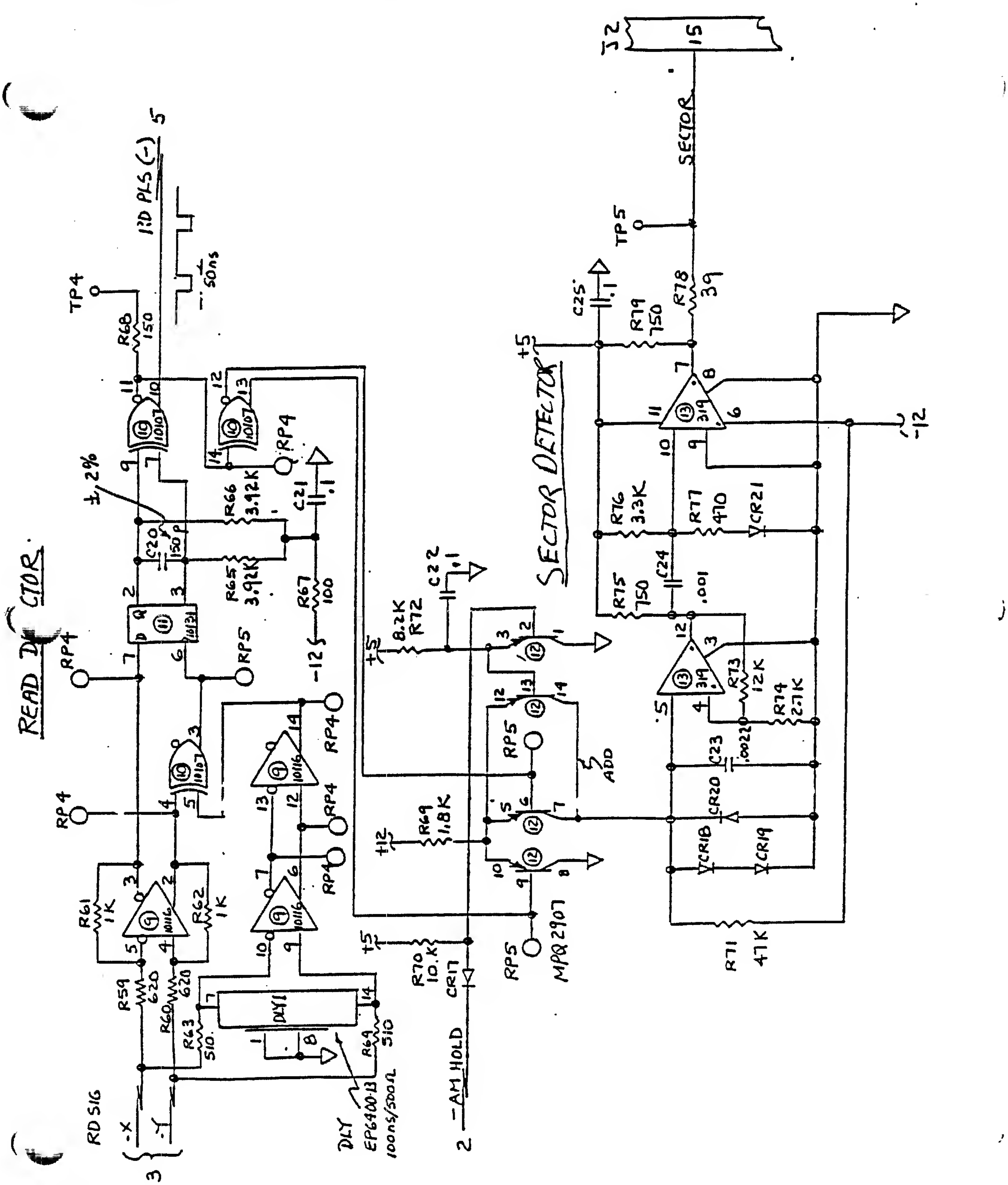
The low reference voltages on pins 11, and 14 of U6 cause it to amplify at maximum gain.

When the selected head starts receiving the next sector, U6 is still at maximum gain, so the sector read signal leaves U6 at a comparatively high amplitude.

Since the gain for the rest of the amplifiers in the AGC circuit is constant, this high output from U6 is amplified even further.

When pin 7 of U8 finally goes up, it causes Q3 to conduct less. This increases the reference voltage to U6, which decreases the output of U6, bringing the output of the AGC circuit back to its normal level.

This whole process occurs after every sector mark, and can be seen at TP1 and TP2 as a flare in amplitude at the beginning of each sector.


SECTOR DETECTOR
SECTOR
J2
15
TP4
TP5
1:D PLS (-)
50ns
R68 150
R78 39
R79 750
C25 .1
R66 3.92K
R65 3.92K
R67 100
C21 .1
C20 150p
±1/2%
R72 8.2K
C22 .1
R76 3.3K
R77 470
CR21
R75 750
C24 .001
R73 12K
R74 2.7K
C23 .0022
CR20
CR18
CR19
R71 47K
R69 1.8K
R70 10.K
CR17
R61 1K
R62 1K
R59 620
R60 620
R63 510
R64 510
DLY1
DLY EP6400-13 100nS/500Ω
MPQ2907
ADD
-AM HOLD
RD SIG
RP4
RP5
+5
-12
+12

**4.2 Read Detector, and Sector Detector Circuits**
The Read Detector detects transitions in the analog MFM read signal and produces a 50 ns pulse for each one that occurs. The result is called digitized data.

U9, U10, and DLY1 set U11 every time a transition occurs.

C20, R65, and R66 make up an RC network that allows the set output of U11 to keep pin 9 of an Exclusive Or in U10 above its threshold and pin 7 below its threshold until the RC network's time constant is satisfied (TC = 50 ns).

This process produces a 50 ns digitized data pulse (called RDPLS) out of pins 10 and 11 of this Exclusive Or for every transition in the received analog signal.

(Refer to the timing diagram on page * for an example of the timing relationship between the analog MFM read signal, digitized data, MFM data, and NRZ data.)

The RDPLS signal is actually digitized MFM data, so it needs to be converted to NRZ data and to be sent to the Controller PCB.

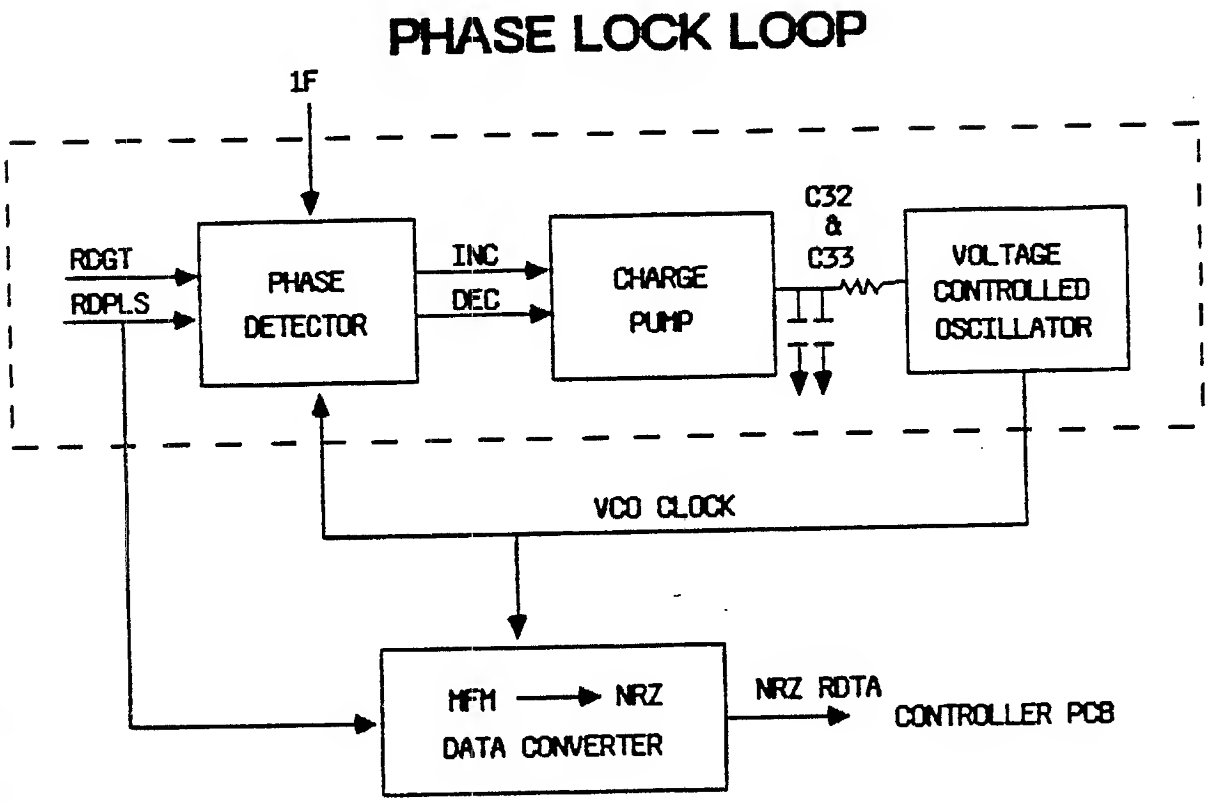
It is also used to detect Sector Marks.

The output of pins 12 and 13 are sent down to the Sector Mark Detector. The RDPLS is gated down through transistors on U12, which pump a charge to C23 at the input of U13.

If there are no read pulses for approximately 10 ms (this can only happen during a sector mark), R71 slowly discharges C23 and causes U13 pin 12 to go high.

This signal is integrated to pin 7 of U13, which produces a 2 us pulse, called SECTOR, to the Z8 on the Controller PCB to notify it that a sector mark has occurred.

When read pulses reappear (as in the sync field at the beginning of a sector), C23 quickly recharges and U13 pin 12 goes low again.


PHASE LOCK LOOP
1F
RDGT
RDPLS
PHASE DETECTOR
INC
DEC
CHARGE PUMP
C32 & C33
VOLTAGE CONTROLLED OSCILLATOR
VCO CLOCK
MFM → NRZ DATA CONVERTER
NRZ RDTA
CONTROLLER PCB

## 4.3 PLL (Phase Locked Loop)

All of the circuitry described prior to this point is constantly enabled.

However, from this point on, signals will be allowed to pass only when enabled by the RDGT signal from the Z8 on the Controller.

The block diagram on the opposite page shows the PLL (Phase Locked Loop) on the Analog PCB.

The PLL provides a clock frequency in sync with the incoming MFM digitized data signal to enable the MFM to NRZ Data Converter to perform its function and to forward the serial NRZ data stream to the Controller PCB.

(for information on Modified Frequency Modulation refer to the MFM explanation at the end of this discussion).

The PLL has two modes:

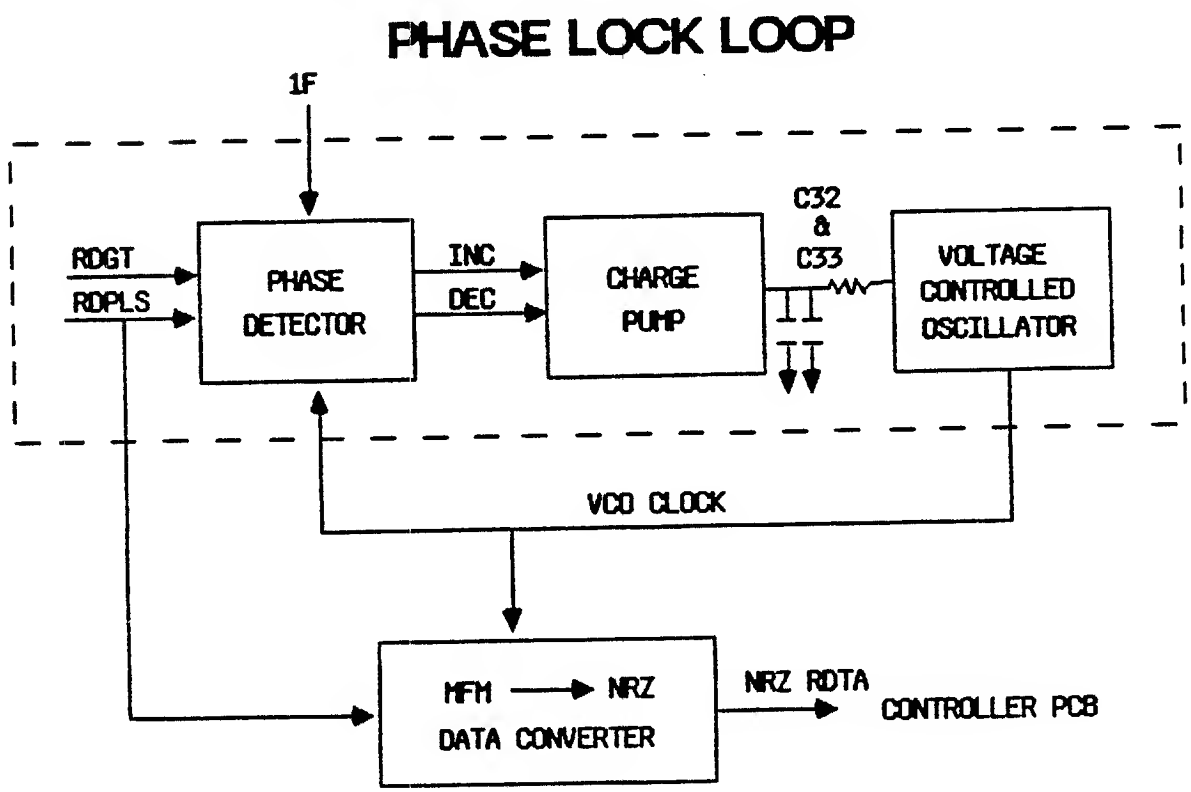
1. The PLL is put in the **Idle** mode when the RDGT signal from the Z8 on the Controller PCB is inactive (any time the Z8 is not actually performing a Read operation; i.e., Write or Idle).

   During the Idle mode the PLL syncs the VCO to the master clock frequency from the Controller PCB. This mode has no real purpose and so will not be discussed any further.

2. The PLL is put in the **Read** mode when the Z8 makes RDGT active during a Read operation. During the Read mode, the PLL syncs the VCO to the incoming MFM digitized data signal. This is performed as follows.

The Phase Detector compares the phase of the VCO clock frequency with the digitized data pulses (RDPLS) from the read analog signal.

If the Phase Detector receives a RDPLS before it receives a VCO pulse, then the VCO's phase is lagging behind the incoming data, and it needs to speed up. So, the Phase Detector generates the INC (increase) signal to the Charge Pump circuit.


PHASE LOCK LOOP
1F
RDGT
RDPLS
PHASE DETECTOR
INC
DEC
CHARGE PUMP
C32 & C33
VOLTAGE CONTROLLED OSCILLATOR
VCO CLOCK
MFM → NRZ DATA CONVERTER
NRZ RDTA
CONTROLLER PCB

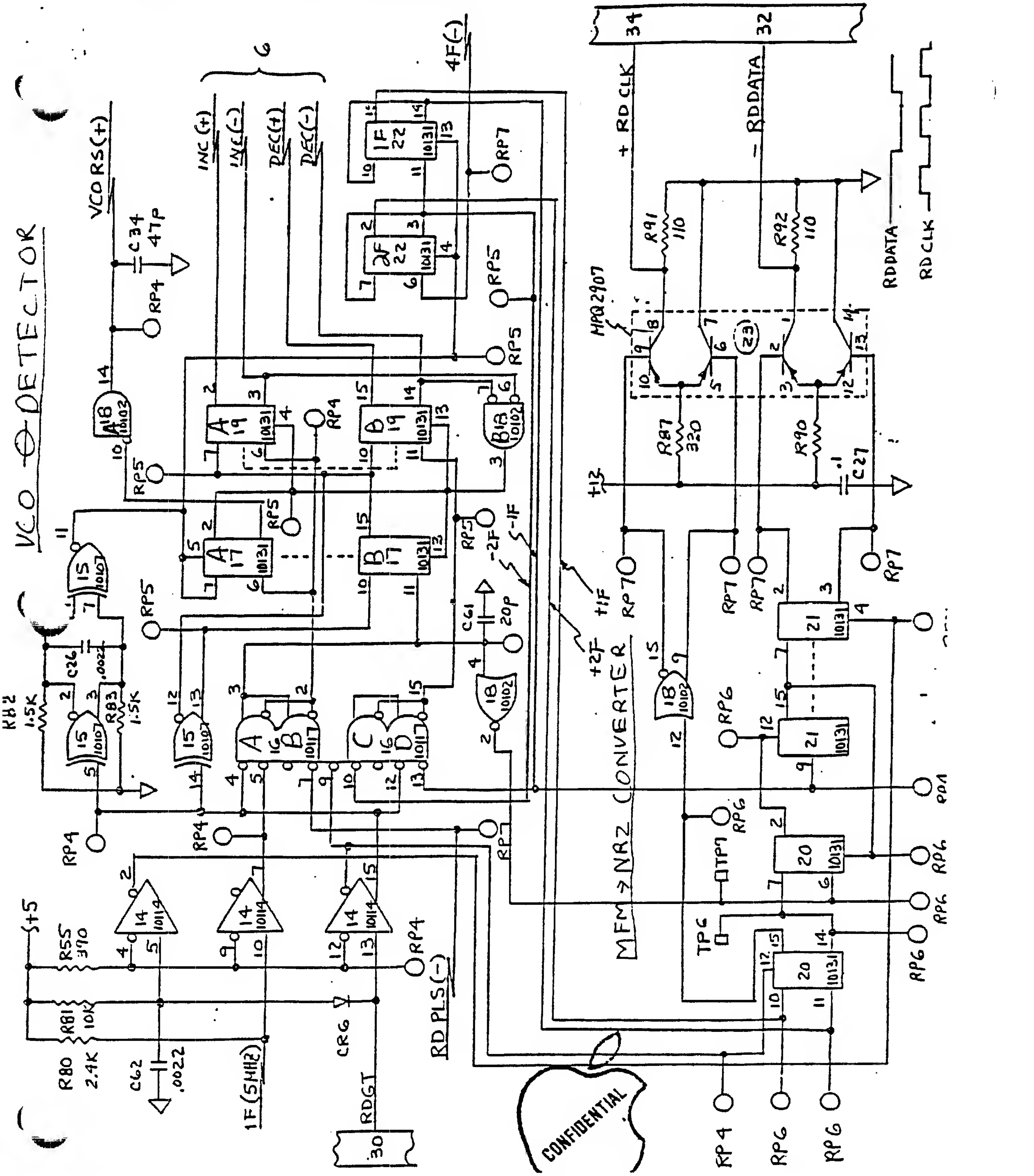
**4.3 PLL (Phase Lock Loop)** (continued)
The Charge Pump circuit is then enabled to put a positive charge on C32 and C33.

C32 and C33 store the VCO control voltage level that controls the frequency produced by the VCO. The more positive input to the VCO now causes it to increase its output frequency to catch up to the frequency of the incoming data.
If the Phase Detector receives a VCO pulse first (before a RDPLS), then the VCO's phase is leading that of the incoming data, and it needs to slow down.

So, the Phase Detector generates the DEC (decrease) signal to the Charge Pump circuit. The Charge Pump circuit is then enabled to put a negative charge on C32 and C33.

The more negative input to the VCO now causes it to decrease its output frequency, to try to slow down to the frequency of the incoming data.

The different circuits in the PLL are explained in greater detail on the following pages.


VCO Φ DETECTOR
MFM → NRZ CONVERTER
+ RD CLK
− RDDATA
RDDATA
RD CLK
MPQ2907
VCORS(+)
INC(+)
INC(−)
DEC(+)
DEC(−)
4F(−)
RD PLS(−)
RDGT
1F (5MHZ)
CONFIDENTIAL

**4.3.1 VCO Phase Detector and MFM to NRZ Data Converter Circuits**

There are two main circuits shown on the opposite page, the VCO Phase Detector (U15, 16, 17, 18, 19, and 22) and the NRZ to MFM converter (U20 and 21).

The VCO Phase Comparator compares the phase of the clocks from the VCO (Voltage Controlled Oscillator) with those of the incoming analog read signal.

The 20 MHz (4F) output of the VCO comes in to pin 6 of FF "A" on U22. FF "A" of U22 divides 4F to 2F (10 MHz), FF "B" divides 2F into 1F (5 MHz).

Pins 2, 14, and 15 from U22 go to the MFM to NRZ data converter. Pin 3 goes to Selector Gate "C" on U16.

The Selector Gates are the inputs to the Phase Dectector and are actually four separate Nand gates.

**VCO Phase Detector Idle Mode**

During Idle mode, RDGT from the Z8 through pin 15 of U14 is low. This enables Selector Gate "A" to pass the 1F master clock frequency and Selector Gate "D" to pass the 1F VCO frequency.

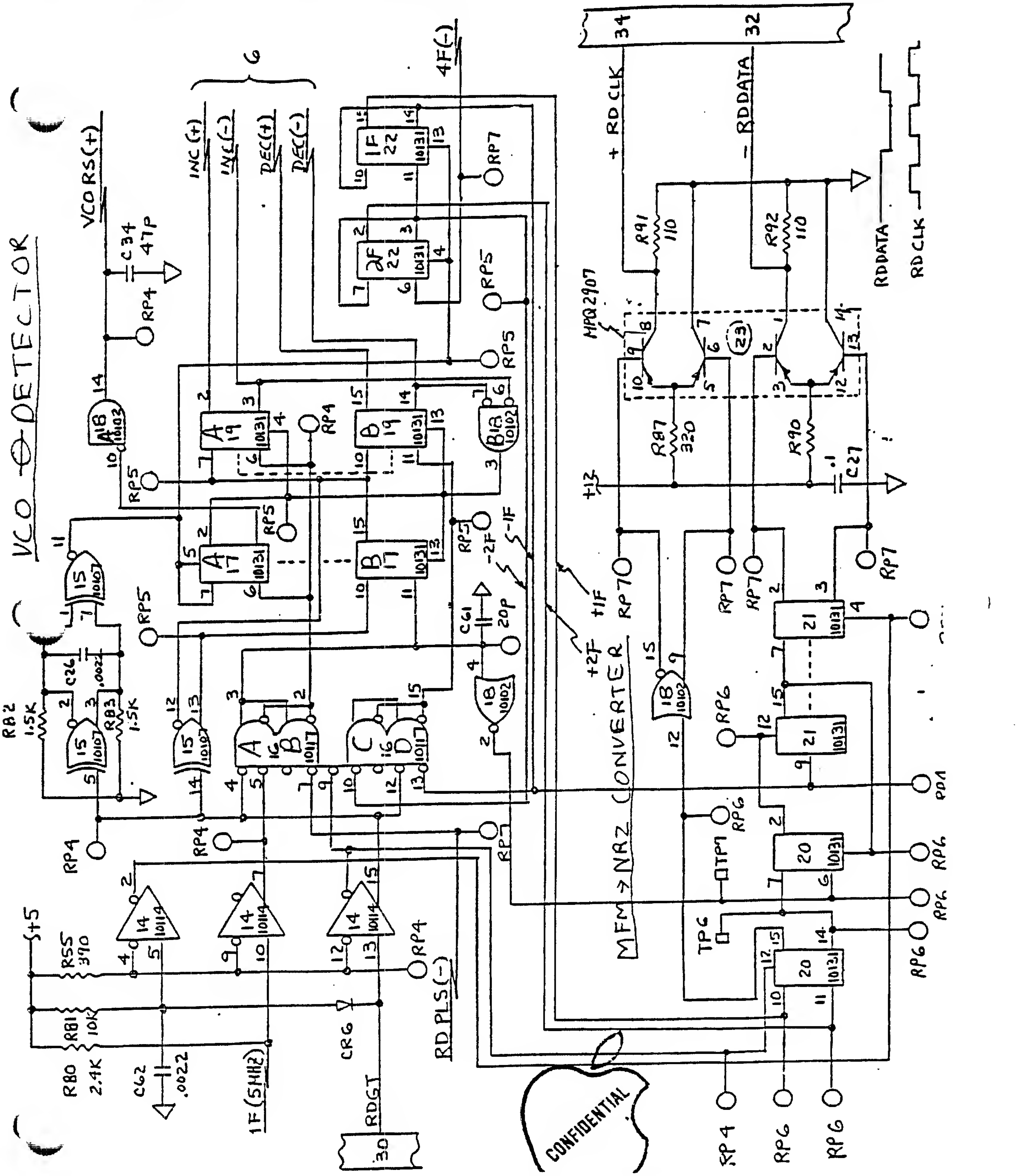
This keeps the VCO in sync with the master clock on the Controller PCB (there is no real reason for this, because the output NRZRDTA is not enabled to go to the Controller PCB.).

**VCO Phase Detector Read Mode**

When the Z8 is performing a Read operation, RDGT is high, enabling Selector Gate "B" to pass RDPLS (digitized MFM read data) and Selector Gate "C" to pass the 2F VCO frequency. (Pin 9 is actually common to both Selector Gates "B" and "C".)

When the Z8 first initiates the Read mode by setting the RDGT signal high, RDGT enters pin 5 of U15 to generate a reset signal to flipflops "A" and "B" in U19 and flipflop "B" in U17.

The reset signal from pin 11 of U15 also presets flipflop "A" in U17 causing the VCRS (VCO Reset) signal out of gate "A" of U18. (Incidently it resets the VCO as its name implies.)


VCO Φ DETECTOR
MFM → NRZ CONVERTER
CONFIDENTIAL
+ RD CLK
– RDDATA
RDDATA
RD CLK
VCORS(+)
INC(+)
INC(-)
DEC(+)
DEC(-)
4F(-)
RD PLS(-)
1F(5MHz)
RDGT
CRG

If the Phase Detector receives a RDPLS before it receives a VCO pulse, then that means the VCO's phase is lagging behind the incoming data so the VCO needs to speed up.

In this case the low out of pin 2 of Selector Gate "B" caused by the RDPLS sets FF "A" in U19 through pin 6, causing it to generate the INC (increase) signal to the Charge Pump circuit.

This signal enables the Charge Pump to put a positive charge on C32, and C33 causing the VCO to speed up.

Later, when the 2F signal from the VCO causes Selector Gate "C" to output a low, it will set FF "B" in U19 through pin 11, gate "B" in U18 will then be fully enabled to reset the FFs U17, and 19.

If the Phase Detector receives a VCO pulse first before a RDPLS, then that means the VCO's phase is leading that of the incoming data so it needs to slow down.

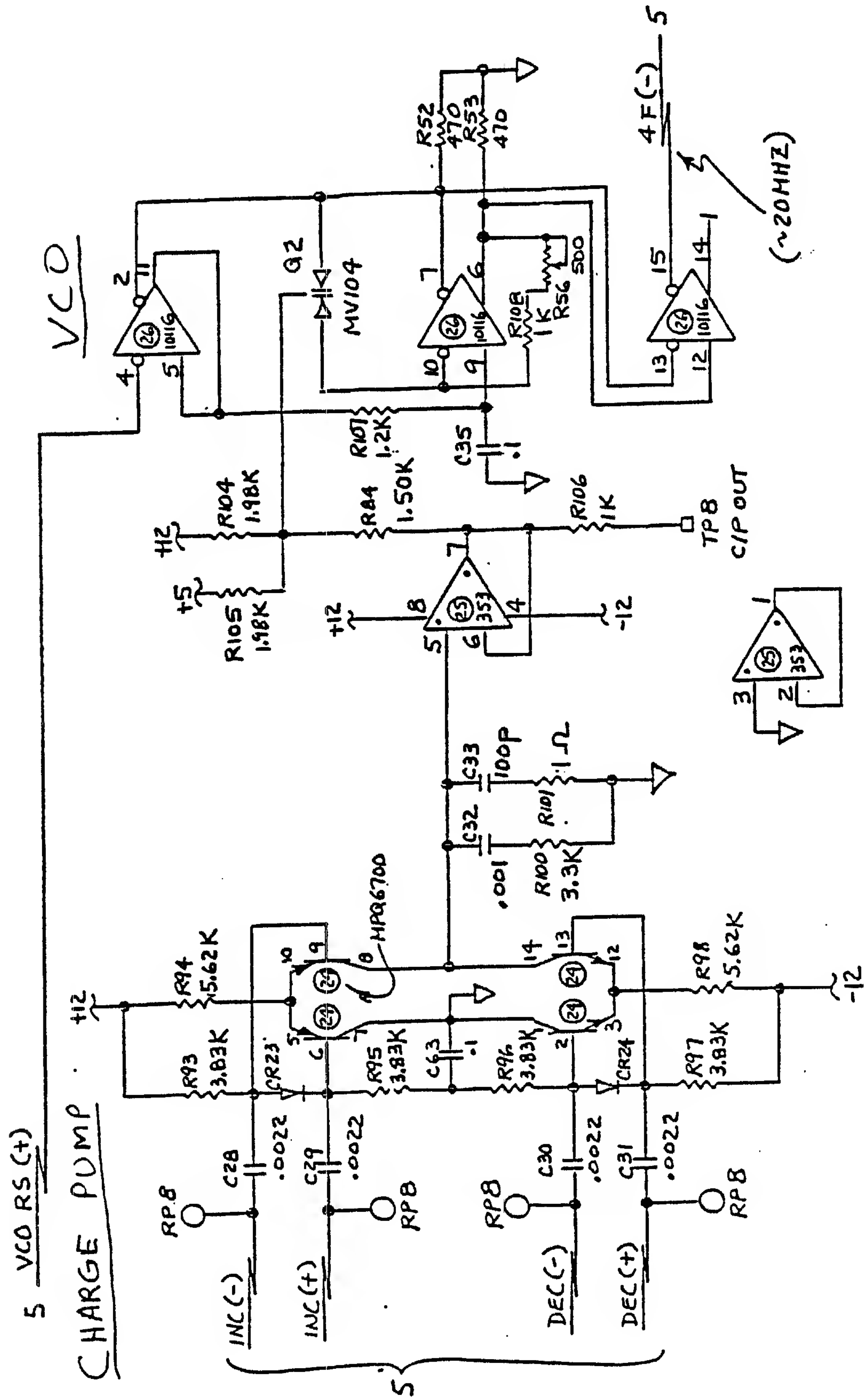
In this case the low out of pin 15 of Selector Gate "C" caused by the VCO 2F signal sets FF "B" in U19 through pin 11 causing it to generate the DEC (decrease) signal to the Charge Pump circuit.

This signal enables the Charge Pump to put a negative charge on C32, and C33 causing the VCO to slow down.

Later when the RDPLS signal arrives, it will cause Selector Gate "B" to output a low, setting FF "A" in U19 through pin 6, gate "B" in U18 will then be fully enabled to reset the FFs U17, and 19.

The RDPLS's are gated down to U20, which takes the digitized MFM data stream and beats it against the function of 1F and 2F ((VCO) now in sync with the incoming data) to convert it to NRZ data.

The results, RD CLK and RD DATA (this data is in NRZ form) are sent to the Controller PCB.


VCO
CHARGE PUMP
5 VCO RS(+)
4F(-) 5
(~20MHZ)
Q2
MV104
R52 470
R53 470
R108 1K
R56 500
R107 1.2K
C35 .1
R104 1.98K
R105 1.98K
R84 1.50K
R106 1K
TP8 C/P OUT
C33 100P
R101 1Ω
C32 .001
R100 3.3K
HPQ6700
R94 5.62K
R98 5.62K
R93 3.83K
R95 3.83K
R96 3.83K
R97 3.83K
C63 .1
CR23
CR24
C28 .0022
C29 .0022
C30 .0022
C31 .0022
RP8
INC(-)
INC(+)
DEC(-)
DEC(+)
+12
-12
+5

**4.3.2 Charge Pump and VCO circuits**
There are two circuits shown on the opposite page, the Charge Pump on the left and the VCO on the right.

If the Phase Detector receives a RDPLS before it receives a VCO pulse, the VCO's phase is lagging behind the incoming data, so the VCO needs to speed up.

In this case, a high INC + (increase) and a low INC - signal come from the Phase Detector. The low INC - turns its NPN transistor on to send a negative voltage to C32 and C33.

U25 ampolifies the negative charge on C32 and C33 to Q2 in the VCO. Q2 is biased by the charge on C32 and C33 to control the frequency produced by the VCO.

If the Phase Detector receives a VCO pulse before it receives a RDPLS then the VCO's phase is leading the incoming data, so the VCO needs to slow down.

In this case, a high DEC + (decrease) and a low DEC - signal come from the Phase Detector.

The high DEC + turns its PNP transistor on to send a positive voltage to pin 5 of an amplifier in U25. Which puts the positive charge on to C32 and C33 for storage, etc.

## WHAT IS MFM (Modified Frequency Modulation) ?:

MFM is a scheme in which the ones and zeros of a digital bit stream are converted to a stream of transitions (phase reversals) according to the following rules:

1. Ones always cause a pulse at center cell time.
2. No more than two cells can occur without a transition.
3. Only one transition can occur per cell time.
4. Zeroes will cause a pulse at the start cell boundary, if not preceded by a one.

Look at a bit stream of 001011000.

```
cell time !.....!.....!.....!.....!.....!.....!.....!.....!.....!.....!
digibits     0     0     1     0     1     1     0     0     0
pulses     .....^.......^..........^.....^.......^.....^......
```

Pulses occurred at the start cell times for the first two zeros. Then a pulse occurred at center cell time for the first one.

However, the pulse for the third zero had to be dropped because the following one would have caused another transition to occur less than one cell time away. This would have broken Rule three.

The second and third pulses occur at center cell. (All ones cause pulses at center cell, it's the zeros that get played with.)

The pulse for the fourth zero gets dropped because it was preceded by a one. The fifth and sixth zeros cause pulses at start cell boundaries because no ones interfere.

The diagram on the following page might help you to gain a better understanding of MFM data and its relation to the other methods of modulating data that are used in the Pro-File.

For the Pro-File, the data frequency is 5 MHz, sometimes referred to as 1F (2F would be 10 MHz, 3F would be 15 MHz, etc.).

## WHAT IS PRECOMPENSATION ?

When one records things at high density on magnetic media, a phenomenon occurs, called, "don't get too close or I'll push you away." This refers to the polarity of the small magnetic fields, on the disk surface associated with each write pulse.

Example:

```
pulses    ..... ......... ............ ..... ......... ..... .....
time       !  1  !   1.5   !      2.0    !  1  !  1.5    !  1  !
push      <-    ->         ->           <-    ->        <-    ->
direction
```

Once data is laid down on the disk, the fields associated with each pulse tend to bend away from their neighbors.

If the data were to be written with no procompensation, three conditions could occur when the data are read back from the disk.

1. **Early** - a bit would be picked up too soon in relation to the last bit read.
2. **Late** - a bit would be picked up too late in relation to the last bit read.
3. **On time** - if no pushaways occur, the data bits will be picked up right where they should be, according to MFM rules.

To counteract the bit shifting in condition one or two, when the NRZ to MFM Write Encoder and Data Precompensator converts NRZ data to MFM data, it also examines the relationship between each bit in the data stream and its immediate neighbors to determine if it is a one followed by a one, a zero followed by a one, and so forth.

The Data Precompensator uses this information to determine if the pushaway phenomenon would occur between the bits in that pair.

The Precompensator can shift the actual pulse timing for Write data in one direction or the other in 15 ns increments.

**Precompensation:** (continued)

This slight compensation makes the pulses read back during the Read operation appear to be occurring at the correct time.

If a bit pair looks like pushaway might cause a bit to be read early, the Precompensator will direct that bit to be written that much later.

If a pair looks like pushaway would cause a bit to be read late, the Precompensator will direct that bit to be written that much earlier.

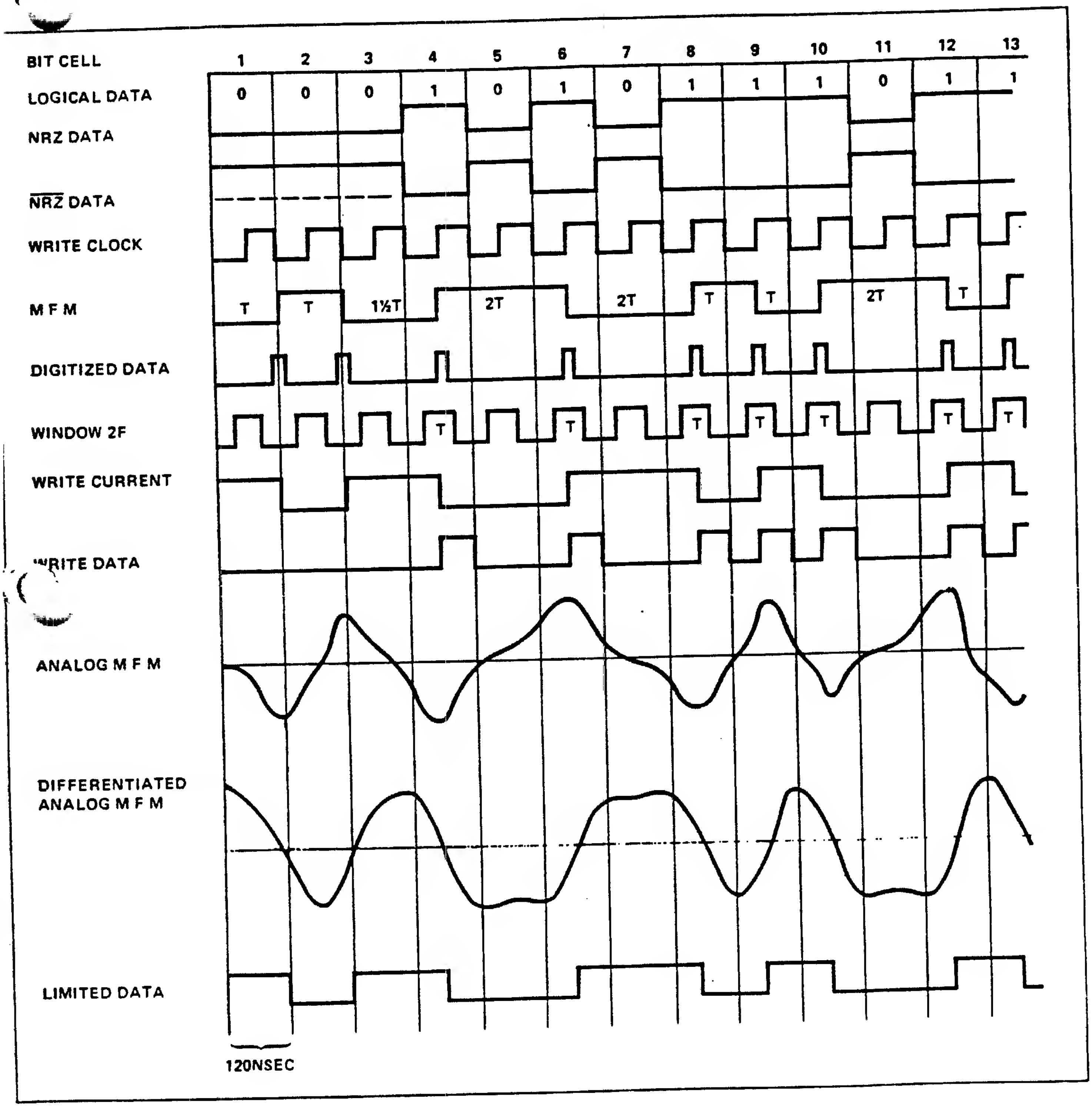
And if the bit pair looks like no pushaway will occur, the Precompensator will allow it to be written as is.

Again, for clarity, if the pushaway effect was not compensated for, the data bits, when they were read, would be time shifted, causing read data errors.

The Write Precompensator identifies the shift that would occur and compensates for it by shifting the write timing the opposite direction of the shift.

That is if a bit would have the tendency to come early it would be retarded. If a bit would have the tendency to come late, it would be advanced. If it was going to be on time, why mess with it.

That's precompensation, and it only occurs on the inside tracks, on the outside tracks the bits are far enough apart that pushaway is not a factor.


BIT CELL
1 2 3 4 5 6 7 8 9 10 11 12 13
LOGICAL DATA
0 0 0 1 0 1 0 1 1 1 0 1 1
NRZ DATA
NRZ DATA
WRITE CLOCK
M F M
T T 1½T 2T 2T T T 2T T
DIGITIZED DATA
WINDOW 2F
T T T T T T T
WRITE CURRENT
WRITE DATA
ANALOG M F M
DIFFERENTIATED ANALOG M F M
LIMITED DATA
120NSEC

INDENTED BILL OF MATERIAL

ECTIVITY DATE: ALL

PARENT PART: 661-92049 PROFILE CONTROLLER CARD SVCE STOCK UM: EA PROD CODE: ECN: S007 ASSEMBLY QTY: 1
ERC: A SRCE CODE: * TYPE: 7 ABC: * PLAN CODE: U DATE: 13-SEP-82

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION | PR CD | S C | T Y | S P | A B | P L | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 002 | 2 | 000-0001 | A | NOT USED THIS ASSEMBLY | | D | * | | D | U | EA | 0 | NONE | 13-SEP-82 | | | |
| 005 | 2 | 000-0002 | A | NOT USED THIS ASSEMBLY | | D | * | | D | U | EA | 0 | NONE | 13-SEP-82 | | | |
| 000 | 2 | 070-0004 | A | SPEC,SERVICE PCB ASSY PKG PROCEDU | | D | * | | * | U | EA | 0 | S007 | 13-SEP-82 | | | |
| 003 | 2 | 073-0002 | A | TAG,REPAIR AND RETURN-SVC | | D | * | | * | U | EA | 1 | S007 | 13-SEP-82 | | | |
| 008 | 2 | 656-4102 | MC | ASSY, PCB TSTD, CONTROLLER | WT | A | 1 | | * | P | EA | 0 | P266 | 13-SEP-82 | | | |
| 002 | 3 | 337-8603 | B | IC SOCKET MICROPRO, W/24P PIGGYBA | RL | P | 1 | | * | P | EA | 0 | C148 | 05-MAY-82 | | 14-OCT-82 | |
| 001 | 3 | 656-0102 | 1J | ASSY,PCB,UNTSTD,CONTROLLER,PROFIL | WU | A | 1 | | * | P | EA | 0 | P462 | 31-AUG-81 | | | |
| 000 | 4 | 050-5006 | 1C | SCHEMATIC, CONTROLLER BD, PROFILE | D | D | 7 | | * | U | EA | 0 | P462 | 04-JAN-82 | | | |
| 063 | 4 | 101-4101 | A | RES 1/4W 5% 100 OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 31-AUG-81 | | | |
| 038 | 4 | 101-4102 | A | RES 1/4W 5% 1K OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 31-AUG-81 | | | |
| 016 | 4 | 101-4103 | A | RES 1/4W 5% 10K OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 31-AUG-81 | | | |
| 036 | 4 | 101-4152 | A | RES 1/4W 5% 1.5K OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 31-AUG-81 | | | |
| 040 | 4 | 101-4201 | A | RES 1/4W 5% 200 OHM | RP | P | 1 | P | C | P | EA | 0 | P375 | 25-MAR-83 | | | |
| 042 | 4 | 101-4303 | A | RES 1/4W 5% 30K OHM | RP | P | 1 | P | C | P | EA | 0 | 620 | 31-AUG-81 | | | |
| 037 | 4 | 101-4332 | A | RES 1/4W 5% 3.3K OHM | RP | P | 5 | P | C | P | EA | 0 | P426 | | | 24-MAR-83 | |
| 075 | 4 | 101-4333 | A | RES, 1/4W 5% 33K OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 31-AUG-81 | | | |
| 039 | 4 | 101-4392 | A | RES 1/4W 5% 3.9K OHMS | RP | P | 1 | P | C | P | EA | 0 | 426 | 31-AUG-81 | | | |
| 041 | 4 | 101-4510 | A | RES, 1/4W 5% 51 OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 25-MAR-83 | | | |
| 077 | 4 | 101-4512 | A | RES 1/4W 5% 5.1K OHM | RP | P | 1 | P | C | P | EA | 0 | 642 | 31-AUG-81 | | | |
| 035 | 4 | 111-0021 | MA | RES ARRAY 7 X 2K | RP | P | 1 | P | C | P | EA | 0 | 642 | 31-AUG-81 | | | |
| 034 | 4 | 111-0022 | MA | RES ARRAY 7 X 10K | RP | P | 1 | P | C | P | EA | 0 | 611 | 31-AUG-81 | | 12-NOV-81 | |
| 070 | 4 | 112-0102 | B | RES, ARRAY, 47 OHM | RP | P | 1 | | * | P | EA | 0 | C022 | 13-NOV-81 | | | |
| 001 | 4 | 112-0105 | B | RESISTOR ARRAY, 8 X 330 OHMS | RP | P | 1 | | C | P | EA | 0 | 757 | 31-AUG-81 | | | |
| 043 | 4 | 125-5701 | A | CAP, 47UF 10V AXIAL | RP | P | 1 | | C | P | EA | 0 | C232 | 07-APR-83 | | | |
| 045 | 4 | 130-0007 | 1B | CAP, CER, AX, .1UF Z5U 25V | RP | P | 1 | | C | P | EA | 0 | 792 | 31-AUG-81 | | | |
| 032 | 4 | 197-0017 | A | CRYSTAL, 10MHZ | EX | P | 7 | | * | P | EA | 0 | C063 | 31-AUG-81 | | | |
| 029 | 4 | 301-0006 | A | IC, 7406 | EX | P | 7 | | * | P | EA | 0 | 442 | 31-AUG-81 | | | |
| 009 | 4 | 305-0000 | A | IC, 74LS00N | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-AUG-81 | | | |
| 026 | 4 | 305-0002 | A | IC, 74LS02N | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-AUG-81 | | | |
| 025 | 4 | 305-0008 | A | IC, 74LS08 | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-AUG-81 | | | |
| 017 | 4 | 305-0014 | A | IC, 74LS14 | RI | P | 1 | P | B | P | EA | 0 | 649 | 31-AUG-81 | | | |
| 027 | 4 | 305-0038 | A | IC, 74LS38 QUAD 2 INPUT BUFFER | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-AUG-81 | | | |
| 019 | 4 | 305-0109 | A | IC, 74LS109 | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-AUG-81 | | | |
| 014 | 4 | 305-0153 | A | IC, 74LS153 | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-AUG-81 | | | |
| 006 | 4 | 305-0161 | A | IC, 74LS161 | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-AUG-81 | | | |
| 020 | 4 | 305-0163 | A | IC, 74LS163 | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-AUG-81 | | | |
| 013 | 4 | 305-0174 | A | IC, 74LS174 | RI | P | 1 | | B | P | EA | 0 | C127 | 31-AUG-81 | | | |
| 003 | 4 | 305-0240 | A | IC, 74LS240 | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-AUG-81 | | | |
| 002 | 4 | 305-0244 | A | IC, 74LS244 | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-AUG-81 | | | |
| 010 | 4 | 305-0257 | A | IC, 74LS257 | RI | P | 1 | P | B | P | EA | 0 | 649 | 31-AUG-81 | | | |
| 030 | 4 | 305-0280 | A | IC, 74LS280 9-BIT PARITY | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-AUG-81 | | | |
| 015 | 4 | 305-0323 | A | IC, 74LS323 | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-AUG-81 | | | |
| 047 | 4 | 305-0377 | A | IC, 74LS377 | RI | P | 1 | P | B | P | EA | 0 | C063 | 31-AUG-81 | | | |
| 024 | 4 | 307-0074 | A | IC, 74S74 | RI | P | 1 | P | B | P | EA | 0 | C063 | 31-AUG-81 | | | |
| 011 | 4 | 307-0086 | A | IC, 74S86 | RL | P | 1 | P | C | P | EA | 0 | 449 | 31-AUG-81 | | | |
| 008 | 4 | 334-2114 | 0 | IC, 1024 X 4 STATIC RAM 2114 | RL | P | 1 | P | C | P | EA | 0 | C021 | 31-AUG-81 | | 12-NOV-81 | |
| 073 | 4 | 335-0004 | A | PROM, 512 X 8 (UNPROGRAMMED) | RL | P | 1 | P | B | P | EA | 0 | 642 | 31-AUG-81 | | 12-NOV-81 | |
| 071 | 4 | 335-0006 | A | PROG OCT 16 INPT AND-OR-INVT GT A | RL | P | 1 | P | C | P | EA | 0 | C-6 | 31-AUG-81 | | 12-NOV-81 | |
| 072 | 4 | 335-6309 | A | PROM, MMI 6309-1 | RL | P | 1 | P | A | P | EA | 0 | 642 | 31-AUG-81 | | | |
| 012 | 4 | 337-8253 | MA | PROGRAMMABLE INTERVAL TIMER | | | | | | | | | | | | | |

# INDENTED BILL OF MATERIAL

ECTIVITY DATE: ALL

PARENT PART: 661-92049 PROFILE CONTROLLER CA... SVCE STOCK TYPE: 7 UM: EA ABC: * PROD CODE: PLAN CODE: U ECN: 8007 ASSEM DATE: 13-SEP-82 QTY: 1

ERC: A SRCE CODE: *

| ITEM | LEVEL | COMPONENT PART NUMBER | ER | PART DESCRIPTION | PR CD | SC | TY | SP | AB | PL | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 008 | 4 | 337-8603 | B | IC SOCKET MICROPRO, W/24P PIGGYBA | RL | P | 1 | | * | P | EA | 0 | C148 | 31-AUG-81 | | 04-MAY-82 | |
| 018 | 4 | 337-9401 | A | CRC GENERATOR/CHECKER | RL | P | 1 | P | A | P | EA | 0 | 642 | 31-AUG-81 | | | |
| 021 | 4 | 341-0066 | A | PROM, U29 | RL | A | I | | * | P | EA | 0 | P105 | 13-NOV-81 | | | |
| 022 | 4 | 341-0067 | A | PROM, U37 | RL | A | 1 | | * | P | EA | 0 | P105 | 13-NOV-81 | | | |
| 007 | 4 | 341-0068 | A | RAMPAL | RL | P | 1 | | * | P | EA | 0 | P105 | 13-NOV-81 | | | |
| 031 | 4 | 341-0080 | B | PROG PROM 2K PROFILE CONTROLLER | RL | P | 1 | | * | P | EA | 0 | P184 | 13-NOV-81 | | 04-MAY-82 | |
| 074 | 4 | 341-0129 | A | EPROM-FIRMWARE 3.90 Z8 PROFILE-27 | RL | A | 1 | | * | P | EA | 0 | P110 | 31-AUG-81 | | 12-NOV-81 | |
| 001 | 5 | 335-2716 | A | EPROM, 2048 X 8 2716 | RL | P | 1 | P | C | P | EA | 0 | 642 | 31-AUG-81 | | | |
| 028 | 4 | 351-2074 | 6A | QUAD DARLINGTON TRANSISTOR ARRAY | RP | P | 1 | P | B | P | EA | 0 | 642 | 31-AUG-81 | | | |
| 023 | 4 | 359-4024 | A | VOLTAGE CONTROLLED MULTIVIBRATOR | RI | P | 1 | P | B | P | EA | 0 | 642 | 31-AUG-81 | | | |
| 033 | 4 | 371-4001 | A | DIODE, IN400I | RP | P | I | P | C | P | EA | 0 | C076 | 31-AUG-81 | | | |
| 076 | 4 | 371-4128 | A | DIODE, ZENER, 60V, 250MW | RP | P | I | | * | P | EA | 0 | P110 | 31-AUG-81 | | 12-NOV-81 | |
| 064 | 4 | 371-4148 | A | DIODE, 1N4148 | RP | P | 1 | P | C | P | EA | 0 | 731 | 13-NOV-81 | | | |
| 062 | 4 | 400-1406 | 1C | SCREW, 4-40 X 3/8 CRS RES PN HD | EX | X | 7 | P | C | P | EA | 0 | C333 | 31-AUG-81 | | | |
| 055 | 4 | 511-1401 | C | SOCKET, IC 14 PIN | RP | P | I | P | C | P | EA | 0 | 799 | 31-AUG-81 | | | |
| 056 | 4 | 511-1601 | C | SOCKET, IC 16 PIN | RP | P | I | P | C | P | EA | 0 | 799 | 31-AUG-81 | | | |
| 057 | 4 | 511-1801 | C | SOCKET, IC 18 PIN | RP | P | 1 | P | C | P | EA | 0 | 799 | 31-AUG-81 | | | |
| 058 | 4 | 511-2001 | C | SOCKET, IC 20 PIN | RP | P | I | P | C | P | EA | 0 | 799 | 31-AUG-81 | | | |
| 059 | 4 | 511-2401 | C | SOCKET, IC 24 PIN | RP | P | I | P | C | P | EA | 0 | 799 | 31-AUG-81 | | | |
| 060 | 4 | 511-4001 | C | SOCKET, IC 40 PIN | RP | P | I | P | C | P | EA | 0 | 799 | 31-AUG-81 | | | |
| 061 | 4 | 515-0005 | B | PIN, SINGLE | RP | P | I | P | C | P | EA | 0 | C115 | 31-AUG-81 | | | |
| 054 | 4 | 515-0053 | MB | CONN, STRAIGHT HEADER 2 PIN | RP | P | I | P | C | P | EA | 0 | 532 | 31-AUG-81 | | | |
| 053 | 4 | 515-0082 | A | HEADER, 10 PIN RT. ANGLE W/O EARS | RP | P | I | | C | P | EA | 0 | C-10 | 31-AUG-81 | | 16-NOV-82 | |
| 066 | 4 | 515-0150 | MA | HEADER, RT ANGLE 5 PIN .156 CENTE | RP | P | I | | * | P | EA | 0 | P105 | 13-NOV-81 | | | |
| 067 | 4 | 515-0160 | MA | HEADER, RT ANGLE 2 PIN .100 CENTE | RP | P | 1 | | * | P | EA | 0 | P105 | 13-NOV-81 | | | |
| 065 | 4 | 519-0100 | 6A | CONN,90 D,PCB MT MET. LNG FTPRINT | RP | P | 1 | | * | P | EA | 0 | P105 | 13-NOV-81 | | | |
| 049 | 4 | 520-001I | A | PLUG CONT. KEY D SUBMINI CONNECTO | RP | P | 1 | | C | P | EA | 0 | 792 | 31-AUG-81 | | | |
| 068 | 4 | 571-0001 | A | WIRE, BUS BAR, 20 AWG, .5 IN. | EX | X | 7 | | * | U | EA | 0 | P232 | 13-NOV-81 | | | |
| 046 | 4 | 820-0055 | E | PCB, CONTROLLER, PROFILE | RP | P | 1 | | * | P | EA | 0 | P375 | 31-AUG-81 | | | |
| 069 | 4 | 835-0150 | A | NUT/WASHER ASSY, (KEPS) 4-40 | EX | P | 7 | | * | P | EA | 0 | 834 | 13-NOV-81 | | | |
| 007 | 2 | 665-92049 | A | PROFILE CONTROLLER CARD EXCHANGED | | * | 7 | | * | U | EA | 1 | S007 | 13-SEP-82 | | | |
| 00I | 3 | 664-92049 | A | PROFILE CONTROLLER CARD DEF FR EX | | * | 7 | | * | U | EA | I | S022 | 13-SEP-82 | | | |
| 001 | 2 | 942-0160 | A | MAILER,ONE PIECE 12 1/2 X 9 1/2 X | EX | X | 7 | | C | P | EA | I | 962 | 13-SEP-82 | | | |
| 004 | 2 | 944-0006 | HA | FOAM, ESTER 11 X 8 1/2 X 3/4 | EX | X | 7 | P | C | P | EA | 2 | S007 | 13-SEP-82 | | | |
| 006 | 2 | 946-0001 | C | TAPE, SEALING GLASS WEB# 341 | EX | X | 7 | P | B | P | RL | 0.0003 | 474 | 13-SEP-82 | | | |

INDENTED BILLS OF MATERIAL

ACTIVITY DATE: ALL

PARENT PART: 661-92048 PROFILE ANALOG CARD SVCE STOCK UM: EA PROD CODE: ECN: 8007 ASSEMBL. QTY: 1
ERC: A SRCE CODE: * TYPE: 7 ABC: * PLAN CODE: U DATE: 13-SEP-82

| ITEM | LEVEL | COMPONENT PART NUMBER | ER | PART DESCRIPTION | PR CO | SC | TY | SP | AB | PL | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 008 | 2 | 000-0001 | A | NOT USED THIS ASSEMBLY | | D | * | | D | U | EA | 0 | NONE | 13-SEP-82 | | | |
| 000 | 2 | 070-0004 | A | SPEC.SERVICE PCB ASBY PKG PROCEOU | | D | * | | * | U | EA | 0 | 8007 | 13-SEP-82 | | | |
| 003 | 2 | 073-0002 | A | TAG,REPAIR AND RETURN-SVC | | D | * | | * | U | EA | 1 | 8007 | 13-SEP-82 | | | |
| 008 | 2 | 656-4101 | A | ASSY, PCB TSTD, ANALOG | MT | A | 1 | | * | P | EA | 0 | P111 | 13-SEP-82 | | | |
| 001 | 3 | 656-0101 | 1H | ASSY, PCB UNTSTD, ANALOG, PROFILE | WU | A | 1 | | * | P | EA | 0 | P489 | 31-AUG-81 | | | |
| 000 | 4 | 050-5005 | 1C | SCHEMATIC, ANALOG BD, PROFILE | D | D | 7 | | * | U | EA | 0 | P418 | 01-MAR-82 | | | |
| 050 | 4 | 101-4010 | A | RES 1/4W 5% 1 OHM | RP | P | 1 | S | C | P | EA | 0 | 426 | 28-JUL-81 | | | |
| 051 | 4 | 101-4101 | A | RES 1/4W 5% 100 OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 28-JUL-81 | | | |
| 053 | 4 | 101-4102 | A | RES 1/4W 5% 1K OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 28-JUL-81 | | | |
| 068 | 4 | 101-4103 | A | RES 1/4W 5% 10K OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 28-JUL-81 | | | |
| 083 | 4 | 101-4104 | A | RES 1/4W 5% 100K OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 28-JUL-81 | | | |
| 080 | 4 | 101-4111 | A | RES 1/4/W 5% 110 OHM | RP | P | 1 | | C | P | EA | 0 | 757 | 28-JUL-81 | | | |
| 064 | 4 | 101-4121 | A | RES 1/4W 5% 120 OHMS | RP | P | 1 | P | C | P | EA | 0 | 426 | 28-JUL-81 | | | |
| 077 | 4 | 101-4122 | A | RES 1/4W 5% 1.2K OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 28-JUL-81 | | | |
| 075 | 4 | 101-4123 | A | RES 1/4W 5% 12K OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 28-JUL-81 | | | |
| 072 | 4 | 101-4151 | A | RES 1/4W 5% 150 OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 28-JUL-81 | | | |
| 061 | 4 | 101-4152 | A | RES 1/4W 5% 1.5K OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 28-JUL-81 | | | |
| 056 | 4 | 101-4182 | A | RES 1/4W 5% 1.8K OHM | RP | P | 1 | P | C | P | EA | 0 | DC19 | 28-JUL-81 | | | |
| 081 | 4 | 101-4201 | A | RES 1/4W 5% 200 OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 28-JUL-81 | | | |
| 069 | 4 | 101-4203 | A | RES 1/4W 5% 20K OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 28-JUL-81 | | | |
| 062 | 4 | 101-4220 | A | RES, 1/4W 22 OHM | RP | P | 1 | P | C | P | EA | 0 | 620 | 28-JUL-81 | | | |
| 055 | 4 | 101-4241 | A | RES 1/4W 5% 240 OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 28-JUL-81 | | | |
| 079 | 4 | 101-4242 | A | RES 1/4W 5% 2.4K OHM | RP | P | 1 | P | C | P | EA | 0 | 757 | 28-JUL-81 | | | |
| 067 | 4 | 101-4243 | A | RES 1/4W 5% 24K OHMS | RP | P | 1 | P | C | P | EA | 0 | 426 | 28-JUL-81 | | | |
| 066 | 4 | 101-4244 | A | RES, 1/4W 5% 240K OHM | RP | P | 1 | P | C | P | EA | 0 | 626 | 28-JUL-81 | | | |
| 078 | 4 | 101-4272 | A | RES 1/4W 5% 2.7K OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 28-JUL-81 | | | |
| 082 | 4 | 101-4301 | A | RES, 1/4W 5% 300 OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 28-JUL-81 | | | |
| 070 | 4 | 101-4331 | A | RES 1/4W 5% 330 OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 28-JUL-81 | | | |
| 073 | 4 | 101-4332 | A | RES 1/4W 5% 3.3K OHM | RP | P | 1 | P | C | P | EA | 0 | 620 | 28-JUL-81 | | | |
| 049 | 4 | 101-4390 | A | RES 1/4W 5% 39 OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 28-JUL-81 | | | |
| 054 | 4 | 101-4391 | A | RES 1/4W 5% 390 OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 28-JUL-81 | | | |
| 060 | 4 | 101-4392 | A | RES 1/4W 5% 3.9K OHMS | RP | P | 1 | P | C | P | EA | 0 | 426 | 13-APR-83 | | | |
| 052 | 4 | 101-4471 | A | RES 1/4W 5% 470 OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 28-JUL-81 | | | |
| 084 | 4 | 101-4473 | A | RES 1/4W 5% 47K OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 28-JUL-81 | | | |
| 065 | 4 | 101-4511 | A | RES 1/4W 5% 510 OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 28-JUL-81 | | | |
| 071 | 4 | 101-4561 | A | RES 1/4W 5% 560 OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 28-JUL-81 | | | |
| 045 | 4 | 101-4681 | A | RES 1/4W 5% 680 OHMS | RP | P | 1 | P | C | P | EA | 0 | 426 | 28-JUL-81 | | | |
| 074 | 4 | 101-4751 | A | RES 1/4W 5% 750 OHM | RP | P | 1 | | C | P | EA | 0 | 757 | 28-JUL-81 | | | |
| 063 | 4 | 101-4752 | A | RES 1/4W 5% 7.5K OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 28-JUL-81 | | | |
| 076 | 4 | 101-4822 | A | RES, CARBON FILM 8.2K OHM | RP | P | 1 | P | C | P | EA | 0 | C127 | 28-JUL-81 | | | |
| 057 | 4 | 101-4823 | A | RES, 1/4W 5% 82K OHM | RP | P | 1 | | C | P | EA | 0 | 757 | 28-JUL-81 | | | |
| 048 | 4 | 108-1543 | A | RES, 1/8W 1% 1.54K OHM 200PPM | RP | P | 1 | | C | P | EA | 0 | 768 | 28-JUL-81 | | | |
| 042 | 4 | 108-1783 | A | RES, 1/8W 1% 1.78K OHM 200PPM | RP | P | 1 | | C | P | EA | 0 | 768 | 28-JUL-81 | | | |
| 041 | 4 | 108-1963 | A | RES, 1/8W 1% 1.96K OHMS | RP | P | 1 | | * | P | EA | 0 | DC49 | 01-MAR-82 | | | |
| 047 | 4 | 108-3833 | A | RESISTOR, 3.83K OHM | RP | P | 1 | | * | P | EA | 0 | DC49 | 31-JUL-81 | | | |
| 039 | 4 | 108-3923 | A | RES, 3.92K OHM 1% | RP | P | 1 | P | C | P | EA | 0 | 605 | 28-JUL-81 | | | |
| 046 | 4 | 108-4531 | A | RES, 1/8W 1% 45.3 OHM, 200PPM | RP | P | 1 | | C | P | EA | 0 | 768 | 28-JUL-81 | | | |
| 043 | 4 | 108-5623 | A | RES, 1/8W 1% 5.62K OHM 200PPM | RP | P | 1 | | C | P | EA | 0 | 768 | 28-JUL-81 | | | |
| 040 | 4 | 109-0005 | A | POT,TRIM 500 OHM,20% | RP | P | 1 | | * | P | EA | 0 | C045 | 18-MAY-82 | | | |
| 098 | 4 | 109-0410 | A | POT, 500 OHM 18 TURN | RP | P | 1 | | C | P | EA | 0 | 808 | 28-JUL-81 | | 02-MAR-82 | |

PRINTED 21-MAY-83 07:08 CUPERTINO OPERATIONS (DIV. 01)

ECTIVITY DATE: ALL

# I N D E N T E D   B I L L   O F   M A T E R I A L

PARENT PART: 661-92048 PROFILE ANALOG CARD SVC_ STOCK UM: EA PROD CODE: ECN: 8007 ASSEMBL. QTY: 1

ERC: A SRCE CODE: * TYPE: 7 ABC: * PLAN CODE: U DATE: 13-SEP-82

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION | PR CD | S C | T Y | S P | A B | P L | UM | EXTENDED QTY PER | ECN CHG / START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 099 | 4 | 109-0420 | MA | POT, 1 TURN .250 DIA, 500 OHMS | RP | P | 1 | | C | P | EA | 0 | P10518-MAY-82 | | | |
| 038 | 4 | 111-0023 | A | RESISTOR ARRAY, 7 X 560 OHMS | RP | P | 1 | | C | P | EA | 0 | 792 28-JUL-81 | | | |
| 094 | 4 | 111-0024 | A | RESISTOR ARRAY, 7 X 4.7K OHMS | RP | P | 1 | | C | P | EA | 0 | 792 28-JUL-81 | | | |
| 059 | 4 | 127-0100 | B | CAP, 4.7UF 20% 10V AXIAL | RP | P | 1 | | * | P | EA | 0 | C18928-JUL-81 | | | |
| 037 | 4 | 127-0101 | B | CAP, 10UF 20% 15/16V AXIAL | RP | P | 1 | | * | P | EA | 0 | C18928-JUL-81 | | | |
| 029 | 4 | 130-0002 | 1B | CAP, .01UF +80/-20% Z5U 25V | RP | P | 1 | P | C | P | EA | 0 | C23228-JUL-81 | | | |
| 097 | 4 | 130-0003 | 1B | CAP, .1UF +80/-20% Z5U 25V | RP | P | 1 | P | C | P | EA | 0 | C232 | | 14-APR-83 | |
| 028 | 4 | 130-0007 | 1B | CAP, CER, AX, .1UF Z5U 25V | RP | P | 1 | | C | P | EA | 0 | C23201-MAR-82 | | | |
| 031 | 4 | 130-0200 | A | CAP, .001UF 10%(K) AXIAL | RP | P | 1 | | C | P | EA | 0 | 768 28-JUL-81 | | | |
| 030 | 4 | 130-0201 | A | CAP, .0022UF 10% AXIAL | RP | P | 1 | | C | P | EA | 0 | 768 28-JUL-81 | | | |
| 036 | 4 | 137-5401 | A | CAP, 20PF, 5% 500VDC | RP | P | 1 | | C | P | EA | 0 | 741 28-JUL-81 | | | |
| 035 | 4 | 137-5701 | 0 | CAP, 47PF 5% 200PPM 500VDC | RP | P | 1 | P | C | P | EA | 0 | 442 28-JUL-81 | | | |
| 034 | 4 | 137-5801 | A | CAP, 75PF 5% 500VDC | RP | P | 1 | | C | P | EA | 0 | 741 28-JUL-81 | | | |
| 032 | 4 | 137-6101 | 0 | CAP, 100PF 5% 200PPM 500VDC | RP | P | 1 | P | C | P | EA | 0 | 442 28-JUL-81 | | | |
| 033 | 4 | 137-6301 | A | CAP, 150PF 5% 500VDC | RP | P | 1 | | C | P | EA | 0 | 741 28-JUL-81 | | | |
| 027 | 4 | 151-4701 | A | CHOKE, 5.6UH, 10% AXIAL | RP | P | 1 | | * | P | EA | 0 | 757 28-JUL-81 | | | |
| 021 | 4 | 156-0100 | A | DELAY LINE 14 PIN DIP 100 OHM, 50 | RP | P | 1 | | * | P | EA | 0 | 792 28-JUL-81 | | | |
| 022 | 4 | 156-0110 | A | DELAY LINE 14 PIN DIP 500 OHM 100 | RP | P | 1 | | * | P | EA | 0 | 792 28-JUL-81 | | | |
| 007 | 4 | 301-0045 | A | IC, 7445 | RI | P | 1 | | C | P | EA | 0 | C06328-JUL-81 | | | |
| 001 | 4 | 301-0074 | A | IC, 7474 | RI | P | 1 | P | C | P | EA | 0 | C06328-JUL-81 | | | |
| 005 | 4 | 305-0014 | A | IC, 74LS14 | RI | P | 1 | P | B | P | EA | 0 | 442 28-JUL-81 | | | |
| 002 | 4 | 305-0174 | A | IC, 74LS174 | RI | P | 1 | P | B | P | EA | 0 | 442 28-JUL-81 | | | |
| 004 | 4 | 307-0064 | A | IC, 74S64 | RI | P | 1 | | B | P | EA | 0 | C06328-JUL-81 | | | |
| 013 | 4 | 325-0102 | A | QUAD 2-INPUT NOR GATE | RI | P | 1 | | C | P | EA | 0 | 741 28-JUL-81 | | | |
| 010 | 4 | 325-0107 | A | TRIPLE 2-INPT EXCL OR/EXCL NOR GA | RI | P | 1 | | C | P | EA | 0 | 741 28-JUL-81 | | | |
| 008 | 4 | 325-0114 | A | TRIPLE LINE RECEIVER | RI | P | 1 | | C | P | EA | 0 | 741 28-JUL-81 | | | |
| 009 | 4 | 325-0116 | A | TRIPLE LINE RECEIVER | RI | P | 1 | | C | P | EA | 0 | 741 28-JUL-81 | | | |
| 012 | 4 | 325-0117 | A | DL 2-WID 2-3-INPT OR-AND/OR-AND-I | RI | P | 1 | | C | P | EA | 0 | 741 28-JUL-81 | | | |
| 011 | 4 | 325-0131 | B | IC ECL HIGH SPEED DUAL D FLIP-FLO | RI | P | 1 | | C | P | EA | 0 | C25528-JUL-81 | | | |
| 006 | 4 | 327-0453 | A | IC, DUAL PERIPHERAL DRIVES | RI | P | 1 | | * | P | EA | 0 | 757 28-JUL-81 | | | |
| 096 | 4 | 335-0007 | A | PROG HEX 16 INPT REG AND-OR GT AR | RL | P | 1 | P | B | P | EA | 0 | 642 28-JUL-81 | | 02-MAR-82 | |
| 003 | 4 | 341-0069 | A | MFMPAL | RL | A | 1 | | * | P | EA | 0 | P10501-MAR-82 | | | |
| 014 | 4 | 351-2907 | A | IC TRANS ARRAY QUAD PNP GEN PURPO | RP | P | 1 | | C | P | EA | 0 | 750 28-JUL-81 | | | |
| 016 | 4 | 351-3127 | A | TRANSISTOR,ARRAY NPN HIGH FREQ, | RP | P | 1 | | C | P | EA | 0 | 750 28-JUL-81 | | | |
| 023 | 4 | 351-6700 | A | IC, TRANS, ARRAY QUAD COMP, PAIRS | RI | P | 1 | | C | P | EA | 0 | 750 28-JUL-81 | | | |
| 058 | 4 | 353-0005 | A | IC REG, +5V 100MA TO 92, 3 TERMNL | RI | P | 1 | | C | P | EA | 0 | 792 28-JUL-81 | | | |
| 018 | 4 | 353-0319 | A | IC, HIGH SPEED DUAL COMPARATOR | RI | P | 1 | | C | P | EA | 0 | 750 28-JUL-81 | | | |
| 017 | 4 | 353-0353 | A | DUAL FET OP AMP/BUFFER | RP | P | 1 | | C | P | EA | 0 | 750 28-JUL-81 | | | |
| 015 | 4 | 353-0592 | A | IC, VIDEO AMPLIFIER | RI | P | 1 | | C | P | EA | 0 | 750 28-JUL-81 | | | |
| 024 | 4 | 371-4152 | A | DIODE 1N4152, FAST SWITCHING | RP | P | 1 | | C | P | EA | 0 | 750 28-JUL-81 | | | |
| 026 | 4 | 375-0010 | A | DIODE 1.2V TEMP. COMP REFERENCE | RP | P | 1 | | C | P | EA | 0 | 750 28-JUL-81 | | | |
| 019 | 4 | 375-0012 | A | DIODE VOLTAGE VARIABLE CAPACITANC | RP | P | 1 | | * | P | EA | 0 | 757 28-JUL-81 | | | |
| 020 | 4 | 376-0016 | A | FET, N-CHANNEL VOLT CONTRL RESIS. | RP | P | 1 | | * | P | EA | 0 | C30328-JUL-81 | | | |
| 090 | 4 | 511-0801 | C | SOCKET, IC 8 PIN | RP | P | 1 | P | C | P | EA | 0 | 799 28-JUL-81 | | 14-APR-83 | |
| 091 | 4 | 511-1401 | C | SOCKET, IC 14 PIN | RP | P | 1 | P | C | P | EA | 0 | 799 28-JUL-81 | | 14-APR-83 | |
| 092 | 4 | 511-1601 | C | SOCKET, IC 16 PIN | RP | P | 1 | P | C | P | EA | 0 | 799 28-JUL-81 | | 14-APR-83 | |
| 093 | 4 | 511-2001 | C | SOCKET, IC 20 PIN | RP | P | 1 | P | C | P | EA | 0 | 799 28-JUL-81 | | 14-APR-83 | |
| 089 | 4 | 515-0005 | B | PIN, SINGLE | RP | P | 1 | P | C | P | EA | 0 | C11528-JUL-81 | | | |
| 087 | 4 | 515-0120 | A | HEADER, SINGLE ROW 4 PIN .1" CNT | RP | P | 1 | | * | P | EA | 0 | 808 28-JUL-81 | | 02-MAR-82 | |
| 085 | 4 | 515-0130 | B | HEADER, RT ANG, 16 PIN DOUBLE ROW | RP | P | 1 | | * | P | EA | 0 | C14928-JUL-81 | | | |

18510

# INDENTED BILLS OF MATERIAL

ECTIVITY DATE: ALL

PARENT PART: 661-92048 PROFILE ANALOG CARD SVCE STOCK UM: EA PROD CODE: ECN: 8007 ASSEMBLY QTY: 1
ERC: A SRCE CODE: * TYPE: 7 ABC: * PLAN CODE: U DATE: 13-SEP-82

| ITEM | LEVEL | COMPONENT PART NUMBER | ER | PART DESCRIPTION | PR CD | SC | TY | SP | AB | PL | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 088 | 4 | 515-0131 | B | HEADER, RT ANG 34 PIN DOBLE ROW | RP | P | 1 | | C | P | EA | 0 | C149 | 01-MAR-82 | | | |
| 086 | 4 | 515-0140 | MA | CONN, RT ANGLE HEADER 5 PIN | RP | P | 1 | | * | P | EA | 0 | 808 | 28-JUL-81 | | | |
| 095 | 4 | 820-0054 | AE | PCB, ANALOG PROFILE | RP | P | 1 | | * | P | EA | 0 | P214 | 01-MAR-82 | | | |
| 007 | 2 | 665-92048 | A | PROFILE ANALOG CARD EXCHANGED | | * | 7 | | * | U | EA | 1 | 8007 | 13-SEP-82 | | | |
| 001 | 3 | 664-92048 | A | PROFILE ANALOG CARD DEF FR EXC | | * | 7 | | * | U | EA | 1 | 8022 | 13-SEP-82 | | | |
| 001 | 2 | 942-0159 | A | RETT MAILER,228,60 X 152,40 X 25, | EX | P | 7 | | * | P | EA | 1 | S007 | 13-SEP-82 | | | |
| 002 | 2 | 942-0167 | A | BAG,BUBL,ANTI-STAT 177,80 X 215,9 | EX | P | 7 | | * | P | EA | 1 | S007 | 13-SEP-82 | | | |
| 005 | 2 | 944-0019 | 1A | WHITE STYROFOAM FLO-PAK | EX | X | 7 | P | B | P | BG | 0,0025 | A393 | 13-SEP-82 | | | |
| 006 | 2 | 946-0001 | C | TAPE, SEALING GLASS WEB# 341 | EX | X | 7 | P | B | P | RL | 0,0003 | 474 | 13-SEP-82 | | | |

ECTIVITY DATE: ALL

INDENTED BILL OF MATERIAL

PARENT PART: 661-92050 PROFILE INTERFACE CARD SVCE STOCK UM: EA PROD CODE: ECN: 8007 ASSEMBLY QTY: 1
ERC: A SRCE CODE: * TYPE: 7 ABC: * PLAN CODE: U DATE: 13-SEP-82

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION | PR CD | S C | T Y | S P | A B | P L | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 008 | 2 | 000-0001 | A | NOT USED THIS ASSEMBLY | | D | * | | D | U | EA | 0 | NONE | 13-SEP-82 | | | |
| 000 | 2 | 070-0004 | A | SPEC,SERVICE PCB ASSY PKG PROCEDU | | D | * | | * | U | EA | 0 | 3007 | 13-SEP-82 | | | |
| 003 | 2 | 073-0002 | A | TAG,REPAIR AND RETURN-SVC | | D | * | | * | U | EA | 1 | 8007 | 13-SEP-82 | | | |
| 008 | 2 | 656-4103 | A | ASSY, PCB TSTD, I/O PROFILE A3 | MT | A | 1 | | * | P | EA | 0 | P113 | 13-SEP-82 | | | |
| 001 | 3 | 656-0103 | AO | ASSY, PCB UNTSTD, I/O PROFILE, A3 | WU | A | 1 | | * | P | EA | 0 | P237 | 31-AUG-81 | | | |
| 000 | 4 | 050-5007 | AA | SCHEMATIC, I/O CARD, PROFILE | O | D | 7 | | * | U | EA | 0 | P163 | 04-JAN-82 | | | |
| 015 | 4 | 101-4103 | A | RES 1/4W 5% 10K OHM | RP | P | 1 | P | C | P | EA | 0 | 426 | 31-JUL-81 | | | |
| 014 | 4 | 101-4332 | A | RES 1/4W 5% 3,3K OHM | RP | P | 1 | P | C | P | EA | 0 | 620 | 31-JUL-81 | | | |
| 029 | 4 | 101-4751 | A | RES 1/4W 5% 750 OHM | RP | P | 1 | | C | P | EA | 0 | 757 | 13-NOV-81 | | | |
| 034 | 4 | 112-0102 | B | RES, ARRAY, 47 OHM | RP | P | 1 | P | C | P | EA | 0 | 611 | 31-AUG-81 | | 12-NOV-81 | |
| 021 | 4 | 112-0104 | B | RESISTOR ARRAY, 7 X 470 OHMS | RP | P | 1 | | * | P | EA | 0 | 772 | 31-JUL-81 | | | |
| 013 | 4 | 112-0105 | B | RESISTOR ARRAY, 8 X 330 OHMS | RP | P | 1 | | * | P | EA | 0 | C022 | 13-NOV-81 | | | |
| 035 | 4 | 130-0003 | 1B | CAP, .1UF +80/-20% Z5U 25V | RP | P | 1 | P | C | P | EA | 0 | C232 | 13-NOV-81 | | 17-MAY-82 | |
| 016 | 4 | 130-0007 | 1B | CAP, CER, AX, .1UF Z5U 25V | RP | P | 1 | | C | P | EA | 0 | C232 | 18-MAY-82 | | | |
| 032 | 4 | 132-6101 | 0 | CAP, 100PF 20% Z5F 50V | RP | P | 1 | P | C | P | EA | 0 | 426 | 13-NOV-81 | | | |
| 031 | 4 | 159-0009 | A | BEAD, FERRITE | RP | P | 1 | P | C | P | EA | 0 | DC62 | 13-NOV-81 | | | |
| 003 | 4 | 301-0038 | A | IC, 7438 | RI | P | 1 | P | C | P | EA | 0 | C063 | 13-NOV-81 | | | |
| 028 | 4 | 301-0259 | A | IC, 74259 | RI | P | 1 | P | C | P | EA | 0 | C063 | 31-JUL-81 | | | |
| 007 | 4 | 301-9334 | A | IC, 9334 | RI | P | 1 | P | C | P | EA | 0 | C063 | 31-JUL-81 | | | |
| 004 | 4 | 305-0010 | A | IC, 74LS10 | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-JUL-81 | | | |
| 002 | 4 | 305-0014 | A | IC, 74LS14 | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-JUL-81 | | | |
| 033 | 4 | 305-0038 | A | IC, 74LS38 QUAD 2 INPUT BUFFER | RI | P | 1 | P | B | P | EA | 0 | 649 | 31-AUG-81 | | 12-NOV-81 | |
| 012 | 4 | 305-0109 | A | IC, 74LS109 | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-JUL-81 | | | |
| 005 | 4 | 305-0125 | A | IC, 74LS125 | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-JUL-81 | | | |
| 001 | 4 | 305-0132 | A | IC, 74LS132 | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-JUL-81 | | | |
| 006 | 4 | 305-0138 | A | IC, 74LS138 | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-JUL-81 | | | |
| 009 | 4 | 305-0244 | A | IC, 74LS244 | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-JUL-81 | | | |
| 010 | 4 | 305-0280 | A | IC, 74LS280 9-BIT PARITY | RI | P | 1 | P | B | P | EA | 0 | 649 | 31-JUL-81 | | | |
| 011 | 4 | 305-0368 | A | IC, 74LS368 | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-JUL-81 | | | |
| 008 | 4 | 305-0374 | A | IC, 74LS374 | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-JUL-81 | | | |
| 026 | 4 | 400-1406 | 1C | SCREW, 4-40 X 3/8 CRS RES PN HD | EX | X | 7 | P | C | P | EA | 0 | C333 | 31-JUL-81 | | | |
| 022 | 4 | 511-1401 | C | SOCKET, IC 14 PIN | RP | P | 1 | P | C | P | EA | 0 | 799 | 31-JUL-81 | | | |
| 023 | 4 | 511-1601 | C | SOCKET, IC 16 PIN | RP | P | 1 | P | C | P | EA | 0 | 799 | 31-JUL-81 | | | |
| 024 | 4 | 511-2001 | C | SOCKET, IC 20 PIN | RP | P | 1 | P | C | P | EA | 0 | 799 | 31-JUL-81 | | | |
| 025 | 4 | 515-0005 | B | PIN, SINGLE | RP | P | 1 | P | C | P | EA | 0 | C115 | 31-JUL-81 | | | |
| 030 | 4 | 519-0100 | 6A | CONN,90 D,PCB MT MET, LNG FTPRINT | RP | P | 1 | | * | P | EA | 0 | P105 | 13-NOV-81 | | | |
| 018 | 4 | 520-0011 | A | PLUG CONT, KEY O SUBMINI CONNECTO | RP | P | 1 | | C | P | EA | 0 | 792 | 31-JUL-81 | | | |
| 020 | 4 | 820-0056 | AC | PCB I/O, PROFILE, FOR A3 | RM | P | 1 | | * | P | EA | 0 | P135 | 31-JUL-81 | | | |
| 027 | 4 | 835-0150 | A | NUT/WASHER ASSY, (KEPS) 4-40 | EX | P | 7 | | * | P | EA | 0 | 834 | 31-JUL-81 | | | |
| 007 | 2 | 665-92050 | A | PROFILE INTERFACE CARD EXCHANGED | | * | 7 | | * | U | EA | 1 | 3007 | 13-SEP-82 | | | |
| 001 | 3 | 664-92050 | A | PROFILE INTERFACE CARD DEF FR EXC | | * | 7 | | * | U | EA | 1 | 8022 | 13-SEP-82 | | | |
| 002 | 2 | 942-0115 | A | BAG, BUBBLE 8 X 6 | EX | X | 7 | | C | P | EA | 1 | P113 | 13-SEP-82 | | | |
| 001 | 2 | 942-0159 | A | RETT MAILER,228.60 X 152.40 X 25. | EX | P | 7 | | * | P | EA | 1 | 3007 | 13-SEP-82 | | | |
| 005 | 2 | 948-0019 | 1A | WHITE STYROFOAM FLO-PAK | EX | X | 7 | P | B | P | BG | 0.0025 | A393 | 13-SEP-82 | | | |
| 006 | 2 | 986-0001 | C | TAPE, SEALING GLASS KEB# 341 | EX | X | 7 | P | B | P | RL | 0.0003 | 474 | 13-SEP-82 | | | |

PARENT PART: A9M0005    1  FG, PROFILE - 'GENERIC' DRIVE - USA    UM: EA    PROD CODE: DH    ECN: F354    ASSEMBLY QTY: 1
FRC: A    SRCE CODE: B    TYPE: 1    ABC: *    PLAN CODE: P    DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | R | PART DESCRIPTION / REMARKS | PR CD / SI / FY / SP / AB / PL | UM | EXTENDED QTY PER | ECN CHG / START DATE | CLOSE DATE |
|---|---|---|---|---|---|---|---|---|---|
| 001 | 2 | 656-8104 | 1J | FG, PROFILE 'GENERIC' DRIVE - USA | * * * * | EA | 1 | L30515-Mar-83 | |
| 003 | 3 | 030-0183 | 1E | REGIS. CARD, PERIPH. & SOFTWARE | EX X 7 P C P | EA | 1 | A92715-Mar-83 | 30-Sep-83 |
| 002 | 3 | 030-0273 | 1D | UNPACKING INSTRUCTIONS, PROFILE | EX X 7 C P | EA | 1 | P72915-Mar-83 | 30-Sep-83 |
| 001 | 3 | 030-0624 | 1B | PACKING LIST, PROFILE DISK DRIVE | * * * * | EA | 1 | P67515-Mar-83 | 30-Sep-83 |
| 030 | 3 | 590-0003 | 1D | CABLE, A.C. POWER CORD | 2M P 1 P C P | EA | 1 | A86230-Jun-83 | 30-Sep-83 |
| 005 | 3 | 600-2515 | A | ASSY, END PAD | WS A 1 * P | EA | 2 | P12515-Mar-83 | 06-Jul-83 |
| 013 | 3 | 600-2516 | B | ASSY, END CAP, PROFILE | WS A 1 * P | EA | 2 | P56815-Mar-83 | 06-Jul-83 |
| 006 | 3 | 600-2517 | A | ASSY., TOP/BOTTOM PAD, PROFILE | * * * * | EA | 2 | P26515-Mar-83 | 06-Jul-83 |
| 032 | 3 | 602-0041 | 1B | ASSY, SHIPPING CTN PROFILE FG'S | * * * * | EA | 1 | L26707-Jul-83 | |
| 001 | 4 | 600-2515 | A | ASSY, END PAD | WS A 1 * P | EA | 2 | P12507-Jul-83 | |
| 004 | 4 | 600-2516 | B | ASSY, END CAP, PROFILE | WS A 1 * P | EA | 2 | P56807-Jul-83 | |
| 002 | 4 | 600-2517 | A | ASSY., TOP/BOTTOM PAD, PROFILE | * * * * | EA | 2 | P26507-Jul-83 | |
| 003 | 4 | 942-0117 | 1C | BOX, 29.5 X 21.25 X 16.13, PROFIL | EX X 7 C P | EA | 1 | P39907-Jul-83 | |
| 005 | 4 | 942-0142 | A | BOX, OFF 19.25 X 10.75 X 6.88 | EX P 7 * P | EA | 1 | P12507-Jul-83 | |
| 007 | 4 | 944-0091 | 1A | CUSHION BLOCK, EPS, PROFILE (TO REPLACE ACC KIT) | * * * * | EA | 1 | P35407-Jul-83 | |
| 006 | 4 | 946-0010 | A | TAPE, SEALING GLASS WFB #341 | EX X 7 B P | RL | 0.0100 | 883 07-Jul-83 | |
| 033 | 3 | 656-5105 | 1C | SUB ASSY, PWR CRD KT, PROFILE | * * * * | EA | 1 | L30501-Oct-83 | |
| 006 | 4 | 030-0183 | 1E | REGIS. CARD, PERIPH. & SOFTWARE | EX X 7 P C P | EA | 1 | A92701-Oct-83 | 11-Dec-83 |
| 002 | 4 | 030-0273 | 1D | UNPACKING INSTRUCTIONS, PROFILE | EX X 7 C P | EA | 1 | P72901-Oct-83 | |
| 003 | 4 | 030-0624 | 1D | PACKING LIST, PROFILE DISK DRIVE | * * * * | EA | 1 | P67501-Oct-83 | |
| 004 | 4 | 590-0003 | 1D | CABLE, A.C. POWER CORD | 2M P 1 P C P | EA | 1 | A86201-Oct-83 | |
| 005 | 4 | 942-0017 | 1D | SHRINK WRAP, 12' CENTERFOLDED | EX X 1 P C P | RL | 1 | L30901-Oct-83 | |
| 001 | 4 | 942-0391 | 1A | INSRT, SCRD CORUGTE 9.00 X 7.25 PR | * * * * | EA | 1 | P56001-Oct-83 | |
| 007 | 4 | 946-0006 | 0 | TAPE, MASKING PERMACEL #P-786 3/4 | EX X 7 P C P | RL | 0.0020 | 131 01-Oct-83 | |
| 034 | 3 | 656-6110 | 3E | INACT.MFG.ASSY, CHASSIS, PROFILE | * * * * | EA | 0 | L305 | 11-Dec-83 |
| 003 | 4 | 400-1604 | 1C | SCR 6-32X1/4 PN HD CRS REC STL ZN | EX X 7 C P | EA | 0 | C54014-Dec-82 | 30-Aug-83 |
| 008 | 4 | 400-1606 | 1C | SCR 6-32X3/8 PN HD CRS REC STL ZN | EX X 1 P C P | EA | 0 | C54001-Jun-83 | 30-Aug-83 |
| 004 | 4 | 400-1608 | 1C | SCR 6-32X1/2 PN HD CRS REC STL ZN | EX X 7 C P | EA | 0 | C54014-Dec-82 | 31-May-83 |
| 013 | 4 | 403-1606 | 1C | SCR 6-32X3/8 PN CRS REC STL BL ZI | EX X 7 S C U | EA | 0 | C54031-Aug-83 | |
| 009 | 4 | 430-1001 | 1C | SCR TAP 8-18X.437 PN CRS STL ZN | EX X 7 P C P | EA | 0 | C54014-Dec-82 | |
| 011 | 4 | 590-0046 | 1B | CABLE, ASSY, I/O PROFILE | RC P 1 * P | EA | 0 | P60314-Dec-82 | 14-Apr-83 |
| 001 | 5 | 519-0110 | 1A | CONN, "D", IDC, 25P, W/O SR | RP P 1 * U | EA | 0 | C78131-Aug-81 | |
| 002 | 5 | 569-0203 | 1B | CABLE, FLAT 25 CONDUCTOR | * * * * | FT | 0 | C52301-Oct-83 | |
| 003 | 5 | 590-0052 | 3A | REIDENTIFY SEE 569-0203 | RC P 1 * P | FT | 0 | C52331-Aug-81 | 30-Sep-83 |
| 010 | 4 | 656-4103 | A | ASSY, PCB TSTD, I/O PROFILE A3 | WT A 1 * P | EA | 0 | P11314-Dec-82 | 14-Apr-83 |
| 001 | 5 | 656-0103 | 1F | ASSY, PCB UNTSTD, I/O PROFILE, A3 | WU A 1 * P | EA | 0 | P78131-Aug-81 | |
| 000 | 6 | 050-5007 | 1B | SCHEMATIC, I/O CARD, PROFILE | D D 7 * U | EA | 0 | P65104-Jan-82 | |
| 015 | 6 | 101-4103 | 1A | RES 10K OHM 1/4W 5% R4,5,7 | RP P 1 P C P | EA | 0 | C67531-Jul-81 | |
| 014 | 6 | 101-4332 | 1A | RES 3.3K OHM 1/4W 5% R1,3,6 | RP P 1 P C P | EA | 0 | C67531-Jul-81 | |
| 029 | 6 | 101-4751 | 1A | RES 750 OHM 1/4W 5% R2 | RP P 1 C P | EA | 0 | C67513-Nov-81 | |
| 034 | 6 | 112-0102 | 1B | RES ARRAY [illegible] 47 OHM 10% | RP P 1 P C P | EA | 0 | C67531-Aug-81 | 12-Nov-81 |
| [illegible] | 6 | 112-0104 | 1B | RES ARRAY [illegible] 470 OHM 5% [illegible] | RP P 1 * P | EA | 0 | C67531-Jul-81 | |
| 013 | 6 | 112-0105 | 1B | RES ARRAY [illegible] 330 OHM [illegible] | RP P 1 * P | EA | 0 | C67513-Nov-81 | 06-Nov-83 |
| [illegible] | 6 | 112-[illegible] | 1B | RES ARRAY [illegible] OHM | * * * * | EA | 0 | [illegible] | |

EFFECTIVITY DATE: ALL

# I N D E N T E D B I L L S O F M A T E R I A L

PARENT PART: A9M0005 1 FG, PROFILE, "GENERIC" DRIVE - USA UM: EA PROD CODE: DH ECN: F354 ASSEMBLY QTY: 1
ERC: A SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | F R | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S F | A B | P L | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | A7,B7 | | | | | | | | | | | | | |
| 035 | 6 | 130-0003 | 1B | CAP CER AXIAL .1 UF +80%-20% 25V | RP | P | 1 | P | C | P | EA | 0 | C939 | 13-Nov-81 | | 17-May-82 | |
| 016 | 6 | 130-0007 | 1B | CAP CER AXIAL .1 UF +80% 20% 25V | RP | P | 1 | | C | P | EA | 0 | C939 | 18-May-82 | | | |
| | | | | C1-C17 | | | | | | | | | | | | | |
| 032 | 6 | 132-6101 | 1A | CAP CER 100 PF 20% 50V | RP | P | 1 | P | C | P | EA | 0 | C541 | 13-Nov-81 | | | |
| | | | | C18 | | | | | | | | | | | | | |
| 031 | 6 | 159-0009 | A | BEAD, FERRITE | RP | P | 1 | P | C | P | EA | 0 | DC62 | 13-Nov-81 | | | |
| | | | | L1 | | | | | | | | | | | | | |
| 003 | 6 | 301-0038 | A | IC, 7438 | RI | P | 1 | P | C | P | EA | 0 | C063 | 13-Nov-81 | | | |
| | | | | B3 | | | | | | | | | | | | | |
| 028 | 6 | 301-0259 | A | IC, 74259 | RI | P | 1 | P | C | P | EA | 0 | C063 | 31-Jul-81 | | | |
| | | | | U13 | | | | | | | | | | | | | |
| | | | | SUB P/N FOR ITEM 7 | | | | | | | | | | | | | |
| 007 | 6 | 301-9334 | A | IC, 9334 | RI | P | 1 | P | C | P | EA | 0 | C063 | 31-Jul-81 | | | |
| | | | | C3 | | | | | | | | | | | | | |
| | | | | SUB P/N 301-0259 | | | | | | | | | | | | | |
| | | | | ITEM 28 | | | | | | | | | | | | | |
| 004 | 6 | 305-0010 | A | IC, 74LS10 | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-Jul-81 | | | |
| | | | | C8 | | | | | | | | | | | | | |
| 002 | 6 | 305-0014 | A | IC, 74LS14 | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-Jul-81 | | | |
| | | | | A2,B4 | | | | | | | | | | | | | |
| 033 | 6 | 305-0038 | A | IC, 74LS38 QUAD 2 INPUT BUFFER | RI | P | 1 | P | B | P | EA | 0 | 649 | 31-Aug-81 | | 12-Nov-81 | |
| 012 | 6 | 305-0109 | A | IC, 74LS109 | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-Jul-81 | | | |
| | | | | B5 | | | | | | | | | | | | | |
| 005 | 6 | 305-0125 | A | IC, 74LS125 | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-Jul-81 | | | |
| | | | | C4 | | | | | | | | | | | | | |
| 001 | 6 | 305-0132 | A | IC, 74LS132 | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-Jul-81 | | | |
| | | | | A3 | | | | | | | | | | | | | |
| 006 | 6 | 305-0138 | A | IC, 74LS138 | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-Jul-81 | | | |
| | | | | C2 | | | | | | | | | | | | | |
| 009 | 6 | 305-0244 | A | IC, 74LS244 | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-Jul-81 | | | |
| | | | | A5 | | | | | | | | | | | | | |
| 010 | 6 | 305-0280 | A | IC, 74LS280 9-BIT PARITY | RI | P | 1 | P | B | P | EA | 0 | 649 | 31-Jul-81 | | | |
| | | | | A4 | | | | | | | | | | | | | |
| 011 | 6 | 305-0368 | A | IC, 74LS368 | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-Jul-81 | | | |
| | | | | B6 | | | | | | | | | | | | | |
| 008 | 6 | 305-0374 | A | IC, 74LS374 | RI | P | 1 | P | B | P | EA | 0 | 442 | 31-Jul-81 | | | |
| | | | | A6 | | | | | | | | | | | | | |
| 026 | 6 | 400-1406 | 1C | SCR 4-40X3/8 PN HD CRS REC STL ZN | EX | X | 7 | P | C | P | EA | 0 | C540 | 31-Jul-81 | | | |
| 022 | 6 | 511-1401 | C | SOCKET, IC 14 PIN | RP | P | 1 | P | C | P | EA | 0 | 799 | 31-Jul-81 | | | |
| 023 | 6 | 511-1601 | C | SOCKET, IC 16 PIN | RP | P | 1 | P | C | P | EA | 0 | 799 | 31-Jul-81 | | | |
| 024 | 6 | 511-2001 | C | SOCKET, IC 20 PIN | RP | P | 1 | P | C | P | EA | 0 | 799 | 31-Jul-81 | | | |
| 025 | 6 | 515-0005 | 1B | CONN,PIN,SINGLE | RP | P | 1 | P | C | P | EA | 0 | C781 | 31-Jul-81 | | | |
| | | | | TP1,TP2 | | | | | | | | | | | | | |
| 030 | 6 | 519-0100 | 1B | CONN,PC TAIL,90 DEG,MELTING FTFPI | RP | P | 1 | | * | P | EA | 0 | C781 | 13-Nov-81 | | | |
| | | | | P1 | | | | | | | | | | | | | |
| 019 | 6 | 520-0011 | 1A | CONN,PLUG,[illegible] [illegible]"D" SUB | [illegible] | P | 1 | | C | P | EA | 0 | C?01 | 31-Jul-81 | | | |
| | | | | P1 | | | | | | | | | | | | | |
| 020 | 6 | 820-0056 | AC | PRT [illegible], PROFILE, FOR A3 | BM | P | 1 | | * | P | EA | 0 | P135 | 31-Jul-81 | | | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | | | * | P | EA | [illegible] | 931 | 31-Jul-[illegible] | | | |

EFFECTIVITY DATE: ALL

INDENTED BILL OF MATERIAL

PARENT PART: A9M0005 1 FG, PROFILE, 'GENERIC' DRIVE USA UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
ERC: A SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION / REMARKS | PP CD | S C | I Y | S P | A R | P L | UM | EXTENDED QTY PER | ECN CHG / START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 002 | 4 | 656-5120 | 3D | INACT.MFG SUBASSY,BASE,PROFILE | | * | * | | * | * | EA | 0 | L30514-Dec-82 | | | |
| 005 | 5 | 400-1604 | 1C | SCR 6-32X1/4 PN HD CRS REC STL ZN | EX | X | 7 | | C | P | EA | 0 | C54014-Dec-82 | | | |
| 006 | 5 | 400-1606 | 1C | SCR 6-32X3/8 PN HD CRS REC STL ZN | EX | X | 1 | P | C | P | EA | 0 | C54001 Apr-83 | | 31-May-83 | |
| 011 | 5 | 400-1608 | 1C | SCR 6-32X1/2 PN HD CRS REC STL ZN | EX | X | 7 | | C | P | EA | 0 | C54001-Jun-83 | | | |
| 007 | 5 | 430-1006 | 1C | SCR TAP 4-20X.250 PN CRS REC STL | EX | X | 7 | | * | P | EA | 0 | C54014-Dec-82 | | 22-Jun-83 | |
| 012 | 5 | 436-1006 | 1C | SCR TAP 4-24X.250 PN CRS REC STL | | * | * | | * | * | EA | 0 | C54023-Jun-83 | | | |
| 001 | 5 | 656-5021 | 6A | SUBASSY COVER,BOTTOM,PROFILE | | * | * | | * | * | EA | 0 | P40801-Apr-83 | | | |
| 002 | 6 | 805-0086 | 1A | SHIELD,CSA PROFILE | | * | * | | * | * | EA | 0 | P40801-Apr-83 | | | |
| 001 | 6 | 815-5008 | 1C | COVER, BOTTOM, PROFILE | RM | P | 1 | | * | P | EA | 0 | P40801-Apr-83 | | | |
| 002 | 5 | 805-0088 | 1C | SUBPANEL, REAR, PROFILE | RP | P | 1 | | * | P | EA | 0 | P52614-Dec-82 | | | |
| 008 | 5 | 805-0104 | A | SUPPORT, PROFILE | RP | P | 1 | | * | P | EA | 0 | P16814-Dec-82 | | | |
| 010 | 5 | 810-0092 | B | COVER,DRIVE,BOTTOM,PROFILE | RM | P | 1 | | * | P | EA | 0 | P16814-Dec-82 | | 31-Mar-83 | |
| 003 | 5 | 810-0095 | 1A | COVER DRIVE,BOTTOM,PROFILE | | * | * | | * | * | EA | 0 | P40801-Apr-83 | | | |
| 009 | 5 | 815-5008 | 1C | COVER, BOTTOM, PROFILE | RM | P | 1 | | * | P | EA | 0 | P40814-Dec-82 | | 31-Mar-83 | |
| 004 | 5 | 865-0005 | MA | FOOT, .52HT, SQ | EX | X | 7 | P | C | P | EA | 0 | 545 14-Dec-82 | | | |
| 005 | 4 | 656-5130 | 3D | INACT.MFG SUBASSY,COVER,PROFILE | | * | * | | * | * | EA | 0 | L30514-Dec-82 | | | |
| 004 | 5 | 590-0047 | 1B | CABLE, ASSY, LED, PROFILE | RC | P | 1 | | * | P | EA | 0 | P46414-Dec-82 | | | |
| 008 | 6 | 517-0041 | 1A | CONN,RCPT,INSUL. DISPL.,2P | RP | P | 1 | | * | U | EA | 0 | C78131-Aug-81 | | | |
| 003 | 6 | 550-0010 | A | TUBING, BRAIDED, 1/8 DIA. | EX | X | 7 | | * | U | IN | 0 | P10931-Aug-81 | | | |
| 007 | 6 | 550-0101 | 1C | TUBING, HEAT SHRINK 1/4 ID BLACK | EX | X | 7 | P | C | P | FT | 0 | C50331-Aug-81 | | | |
| 006 | 6 | 550-0103 | 1C | TUBING, HEAT SHRINK 1/16 ID BLACK | EX | X | 7 | P | C | P | FT | 0 | C50331-Aug-81 | | | |
| 004 | 6 | 561-2600 | B | WIRE, BLACK 26 AWG, 7 X 34 | EX | X | 7 | P | * | P | FT | 0 | 764 31-Aug-81 | | | |
| 005 | 6 | 561-2622 | B | WIRE, 26 AWG STRAND. RED | EX | X | 7 | | * | U | FT | 0 | C01831-Aug-81 | | | |
| 001 | 6 | 710-0004 | MA | LED, RED APPLE III DISKCABLE | RP | X | 1 | P | C | P | EA | 0 | 552 31-Aug-81 | | | |
| 002 | 6 | 815-0190 | 0 | GROMET, PANEL MTG. FOR RECT. LAMP | RM | X | 1 | P | C | P | EA | 0 | 442 31-Aug-81 | | 26-Apr-83 | |
| 001 | 5 | 699-5011 | 1B | PURCH ASSY,COATD TOP CVR,PRFLE-B | | * | * | | * | * | EA | 0 | L05112-Dec-83 | | | |
| 001 | 6 | 815-5007 | 1C | COVER, TOP, PROFILE | RM | P | 1 | | * | P | EA | 0 | P40812-Dec-83 | | | |
| 008 | 5 | 815-0190 | 0 | GROMET, PANEL MTG. FOR RECT. LAMP | RM | X | 1 | P | C | P | EA | 0 | 442 27-Apr-83 | | | |
| 009 | 5 | 815-5007 | 1C | COVER, TOP, PROFILE | RM | P | 1 | | * | P | EA | 0 | P408 | | 11-Dec-83 | |
| 005 | 5 | 825-0311 | 1B | LABEL, LOGO 16MM BY 16MM | EX | X | 7 | P | C | P | EA | 0 | P51414-Dec-82 | | 15-Feb-83 | |
| 006 | 5 | 825-0313 | 1B | LABEL, NAMEPLATE, PROFILE | EX | P | 7 | | * | P | EA | 0 | P51414-Dec-82 | | 15-Feb-83 | |
| 007 | 5 | 825-0315 | 1C | LABEL, LED PROFILE | EX | P | 7 | | * | P | EA | 0 | P51414-Dec-82 | | 15-Feb-83 | |
| 003 | 5 | 830-0025 | 3A | INACTIVE,REIDENTIFIED SEE 830-002 | | X | * | | * | P | EA | 0 | C61114-Dec-82 | | | |
| 002 | 5 | 835-0005 | 1B | NUT, SPEED 'J' TYPE SIZE 8 | EX | X | 7 | P | C | P | EA | 0 | C74414-Dec-82 | | | |
| 001 | 4 | 656-5150 | 3A | INACT.MFG SUBASY,HDA/PWR SUP.PROF | | * | * | | * | * | EA | 0 | L30514-Dec-82 | | | |
| 003 | 5 | 341-0171 | A | MICROPRCSR-2K PROG ROM FORR PROFI | | * | * | | * | * | EA | 0 | P26614-Dec-82 | | | |
| 001 | 5 | 656-5110 | 6C | MFG SUBASSY, POWER SUPPLY, PROFIL | | * | * | | * | * | EA | 0 | P55814-Dec-82 | | | |
| 007 | 6 | 400-1603 | 1C | SCR 6-32X3/16 PN HD CRS REC STL Z | EX | P | 7 | | * | P | EA | 0 | C54014-Dec-82 | | | |
| 006 | 6 | 656-4102 | MC | ASSY, PCB TSTD, CONTROLLER | WT | A | 1 | | * | P | EA | 0 | P26614-Dec-82 | | | |
| 002 | 7 | 337-8603 | B | IC SOCKET MICROPRO. W/24P PIGGYBA<br>U25 | RL | P | 1 | | * | P | EA | 0 | C14805-May-82 | | 14-Oct-82 | |
| 001 | 7 | 656-0102 | 1M | ASSY,PCB,UNTSTD,CONTROLLER,PROFIL | WU | A | 1 | | * | P | EA | 0 | P65131-Aug-81 | | | |
| 000 | 8 | 050-5006 | 1E | SCHEMATIC, CONTROLLER BD, PROFILE | D | D | 7 | | * | U | EA | 0 | P65104-Jan-82 | | | |
| 063 | 8 | 101-4101 | 1A | RES 100 OHM 1/4W 5%<br>R20,R21 | RP | P | 1 | P | C | P | EA | 0 | C67531-Aug-81 | | | |
| 0?8 | 8 | 101-4102 | 1A | RES 1K OHM 1/4W 5%<br>R15 | RP | P | 1 | P | C | P | EA | 0 | C67531 Aug-81 | | 14-Oct-83 | |
| 016 | [illegible] | 101-4103 | 1A | RES 10K OHM 1/4W [illegible]<br>R1[illegible] | RP | P | 1 | P | C | P | EA | 0 | C67531-Aug-81 | | | |
| [illegible] | [illegible] | 101-41[illegible] | 1[illegible] | [illegible] OHM [illegible] | [illegible] | [illegible] | 1 | P | C | P | EA | 0 | C67[illegible] Aug-[illegible] | | | |

EFFECTIVITY DATE: ALL

I N D E N T E D B I L L O F M A T E R I A L

PARENT PART: A9M0005 1 FG, PROFILE, 'GENERIC' DRIVE - USA UM: EA PROD CODE: DH ECN: F354 ASSEMBLY QTY: 1
EPC: A SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: F DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E F | PART DESCRIPTION / REMARKS | PR CD C Y P B L UM (S T S A P) | EXTENDED QTY EFF | ECN CHG / START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | R9,R10 | | | | | | |
| 040 | 8 | 101-4201 | 1A | RES 200 OHM 1/4W 5%<br>R17 | RP P 1 P C P EA | 0 | C67531-Aug-81 | | | |
| 042 | 8 | 101-4303 | 1A | RES 30K OHM 1/4W 5%<br>R1,R2,R4,R5 | RP P 1 P C P EA | 0 | C67525-Mar-83 | | | |
| 037 | 8 | 101-4332 | 1A | RES 3.3K OHM 1/4W 5%<br>R3,R6,R7,R8,<br>R11,R12,R13,R18 | RP P 1 P C P EA | 0 | C67531-Aug-81 | | | |
| 075 | 8 | 101-4333 | 1A | RES 33K OHM 1/4W 5%<br>R1,R2,R4,R5 | RP P 5 P C P EA | 0 | C675 | | 24-Mar-83 | |
| 039 | 8 | 101-4392 | 1A | RES 3.9K OHM 1/4W 5%<br>R14 | RP P 1 P C P EA | 0 | C67531-Aug-81 | | 14-Oct-83 | |
| 041 | 8 | 101-4510 | 1A | RES 51 OHM 1/4W 5%<br>R16 | RP P 1 P C P EA | 0 | C67531-Aug-81 | | | |
| 077 | 8 | 101-4512 | 1A | RES 5.1K OHM 1/4W 5%<br>R22 | RP P 1 P C P EA | 0 | C67525-Mar-83 | | | |
| 035 | 8 | 111-0021 | 1A | RES NETWORK 7 X 2K OHM 5%<br>RP1 | RP P 1 P C P EA | 0 | C67531-Aug-81 | | | |
| 034 | 8 | 111-0022 | 1A | RES NETWORK 7 X 10K OHM 5%<br>RP2 | RP P 1 P C P EA | 0 | C67531-Aug-81 | | | |
| 070 | 8 | 112-0102 | 1B | RES ARRAY 8 X 47 OHM 10% | RP P 1 P C P EA | 0 | C67531-Aug-81 | | 12-Nov-81 | |
| 001 | 8 | 112-0105 | 1B | RES ARRAY 8 X 330 OHM<br>U1,U2 | RP P 1 * P EA | 0 | C67513-Nov-81 | | 06-Nov-83 | |
| 081 | 8 | 112-0107 | 1B | RES ARRAY 8 X 100 OHM<br>U1,U2 | * * * * EA | 0 | C67507-Nov-83 | | | |
| 043 | 8 | 125-5701 | 1B | CAP ELECT 47 uF -10%+75% 10V<br>C8,C21,C29,C30 | RP P 1 C P EA | 0 | C77231-Aug-81 | | | |
| 045 | 8 | 130-0007 | 1B | CAP CER AXIAL .1 UF +80%-20% 25V | RP P 1 C P EA | 0 | C93907-Apr-83 | | | |
| 032 | 8 | 197-0017 | A | CRYSTAL, 10MHz | EX P 7 * P EA | 0 | 792 31-Aug-81 | | 14-Oct-83 | |
| 078 | 8 | 197-0502 | 1A | CLOCK OSC,CRYSTAL 10 MHz (TTL) | * * * * EA | 0 | C57615-Oct-83 | | | |
| 080 | 8 | 197-0504 | 1A | CLOCK OSCILLATOR,CRYSTAL,10 MHz<br>ALT FOR ITEM 78<br>ALT QTY 1 | * * * * EA | 0 | C58416-Oct-83 | | | |
| 029 | 8 | 301-0006 | A | IC, 7406<br>U41 | EX P 7 * P EA | 0 | C06331-Aug-81 | | | |
| 009 | 8 | 305-0000 | A | IC, 74LS00N<br>U15,U26 | RI P 1 P B P EA | 0 | 442 31-Aug-81 | | | |
| 026 | 8 | 305-0002 | A | IC, 74LS02N<br>U31 | RI P 1 P B P EA | 0 | 442 31-Aug-81 | | | |
| 025 | 8 | 305-0008 | A | IC, 74LS08<br>U32 | RI P 1 P B P EA | 0 | 442 31-Aug-81 | | | |
| 017 | 8 | 305-0014 | A | IC, 74LS14<br>U23 | RI P 1 P B P EA | 0 | 442 31-Aug-81 | | | |
| 027 | 8 | 305-0038 | A | IC, 74LS38 QUAD 2 INPUT BUFFER<br>U24 | RI P 1 P B P EA | 0 | 649 31-Aug-81 | | | |
| 019 | 8 | 305-0109 | A | IC, 74LS109<br>U37 | RI P 1 P B P EA | 0 | 442 31-Aug-81 | | | |
| 014 | 8 | 305-0153 | A | IC, 74LS153<br>U[illegible] | RI P 1 P B P EA | 0 | 442 31-Aug-81 | | | |
| [illegible] | 8 | 305-01[illegible] | A | IC, 74LS1[illegible] | RI P 1 P B P EA | 0 | 442 31-Aug-81 | | | |

EFFECTIVITY DATE: ALL I N D E N T E D B I L L S O F M A T E R I A L

PARENT PART: 09M0005 1 FG, PROFILE, 'GENERIC' DRIVE USA UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
REC: A SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | | PART DESCRIPTION / REMARKS | PR S T S A P CH C Y P B L UM | EXTENDED QTY PER | ECN CHG START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | U10,U16,U17 | | | | | | |
| 020 | 8 | 305-0163 | A | IC, 74LS163 | RI P 1 P B P EA | 0 | 442 31-Aug-81 | | | |
| | | | | U22 | | | | | | |
| 013 | 8 | 305-0174 | A | IC, 74LS174 | RI P 1 P B P EA | 0 | 442 31-Aug-81 | | | |
| | | | | U30,U34,U38 | | | | | | |
| 003 | 8 | 305-0240 | A | IC, 74LS240 | RI P 1 B P EA | 0 | C12731-Aug-81 | | | |
| | | | | U9 | | | | | | |
| 002 | 8 | 305-0244 | A | IC, 74LS244 | RI P 1 P B P EA | 0 | 442 31-Aug-81 | | | |
| | | | | U4,U5 | | | | | | |
| 010 | 8 | 305-0257 | A | IC, 74LS257 | RI P 1 P B P EA | 0 | 442 31-Aug-81 | | | |
| | | | | U13,U20 | | | | | | |
| 030 | 8 | 305-0280 | A | IC, 74LS280 9-BIT PARITY | RI P 1 P B P EA | 0 | 649 31-Aug-81 | | | |
| | | | | U3 | | | | | | |
| 015 | 8 | 305-0323 | A | IC, 74LS323 | RI P 1 P B P EA | 0 | 442 31-Aug-81 | | | |
| | | | | U14 | | | | | | |
| 047 | 8 | 305-0377 | A | IC, 74LS377 | RI P 1 P B P EA | 0 | 442 31-Aug-81 | | | |
| | | | | U21 | | | | | | |
| 024 | 8 | 307-0074 | A | IC, 74S74 | RI P 1 P B P EA | 0 | C06331-Aug-81 | | | |
| | | | | U39 | | | | | | |
| 011 | 8 | 307-0086 | A | IC, 74S86 | RI P 1 P B P EA | 0 | C06331-Aug-81 | | | |
| | | | | U28 | | | | | | |
| 008 | 8 | 334-2114 | 1C | IC 1024x4 STATIC RAM 2114 TST&BRN | RL P 1 P C P EA | 0 | C62131-Aug-81 | | | |
| | | | | U11,U18 | | | | | | |
| 000 | 9 | 062-0083 | 1B | SPEC, 2114 RAM BURN-IN | EX D 7 * U EA | 0 | C31415-Jul-83 | | | |
| 001 | 9 | 333-2114 | 1B | IC 1024 X 4 STATIC RAM 2114 | RL P 1 C P EA | 0 | C43715-Jul-83 | | | |
| 073 | 8 | 335-0004 | A | PROM, 512 X 8 (UNPROGRAMMED) | RL P 1 P C P EA | 0 | C02131-Aug-81 | | 12-Nov-81 | |
| 071 | 8 | 335-0006 | A | PROG OCT 16 INPT AND-OR-INVT GT A | RL P 1 P B P EA | 0 | 642 31-Aug-81 | | 12-Nov-81 | |
| 072 | 8 | 335-6309 | A | PROM, MMI 6309-1 | RL P 1 P C P EA | 0 | C-6 31-Aug-81 | | 12-Nov-81 | |
| 012 | 8 | 337-8253 | MA | PROGRAMMABLE INTERVAL TIMER | RL P 1 P A P EA | 0 | 642 31-Aug-81 | | | |
| | | | | U33 | | | | | | |
| 004 | 8 | 337-8603 | B | IC SOCKET MICROPRO. W/24P PIGGYBA | RL P 1 * P EA | 0 | C14831-Aug-81 | | 04-May-82 | |
| | | | | U25 | | | | | | |
| 018 | 8 | 337-9401 | A | CRC GENERATOR/CHECKER | RL P 1 P A P EA | 0 | 642 31-Aug-81 | | | |
| | | | | U35 | | | | | | |
| 021 | 8 | 341-0066 | A | PROM, U29 | RL A 1 * P EA | 0 | P10513-Nov-81 | | | |
| | | | | (MMI 6309-1) | | | | | | |
| 022 | 8 | 341-0067 | A | PROM, U37 | RL A 1 * P EA | 0 | P10513-Nov-81 | | | |
| 007 | 8 | 341-0068 | A | RAMPAL | RL P 1 * P EA | 0 | P10513-Nov-81 | | | |
| | | | | U27 (OCT 16 INPT | | | | | | |
| | | | | AND-OR-INVT GT ARY) | | | | | | |
| 031 | 8 | 341-0080 | B | PROG PROM 2K PROFILE CONTROLLER | RL P 1 * P EA | 0 | P18413-Nov-81 | | 04-May-82 | |
| 074 | 8 | 341-0129 | A | EPROM-FIRMWARE 3.90 Z8 PROFILE-27 | RL A 1 * P EA | 0 | P11031-Aug-81 | | 12-Nov-81 | |
| 001 | 9 | 335-2716 | A | EPROM, 2048 X 8 2716 | RL P 1 P C P EA | 0 | 642 31-Aug-81 | | | |
| 028 | 8 | 351-2074 | A | QUAD DARLINGTON XSTR ARRAY 2074B | RP P 1 P B P EA | 0 | 642 31-Aug-81 | | | |
| | | | | U7,U8 | | | | | | |
| 023 | 8 | 359-4024 | A | VOLTAGE CONTROLLED MULTIVIBRATOR | RI P 1 P B P EA | 0 | 642 31-Aug-81 | | 14-Oct-83 | |
| | | | | U40 | | | | | | |
| 033 | 8 | 371-4001 | 1A | DIODE RECTIFIER 1N4001 1.0A 50V | RP P 1 P C P EA | 0 | C59931-Aug-81 | | | |
| | | | | CR1-CR4 | | | | | | |
| [illegible] | [illegible] | [illegible]-4129 | [illegible] | DIODE ZENER [illegible] | [illegible] | 0 | [illegible] Aug-81 | | [illegible] | |

EFFECTIVITY DATE: ALL

I N D E N T E D B I L L S O F M A T E R I A L

PARENT PART: A9M0005 1 FG, PROFILE, 'GENERIC' DRIVE - USA UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
ERC: A SRCE CODE: C TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | F | PART DESCRIPTION / REMARK | PP CD | S CY | T YP | S PB | A BC | P L | UM | EXTENDED QTY PER | ECN CHG START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 064 | 8 | 371-4148 | A | DIODE FAST SWITCH IN4148 200mA 75<br>CR9-CR12 | RP | P | 1 | P | C | P | EA | 0 | C53913-Nov-81 | | | |
| 062 | 8 | 400-1406 | 1C | SCR 4-40X3/8 PN HD CRS REC STL ZN | EX | X | 7 | P | C | P | EA | 0 | C54031-Aug-81 | | | |
| 055 | 8 | 511-1401 | C | SOCKET, IC 14 PIN | RP | P | 1 | P | C | P | EA | 0 | 799 07-Apr-83 | | | |
| 056 | 8 | 511-1601 | C | SOCKET, IC 16 PIN | RP | P | 1 | P | C | P | EA | 0 | 799 31-Aug-81 | | | |
| 057 | 8 | 511-1801 | C | SOCKET, IC 18 PIN | RP | P | 1 | P | C | P | EA | 0 | 799 31-Aug-81 | | | |
| 058 | 8 | 511-2001 | C | SOCKET, IC 20 PIN | RP | P | 1 | P | C | P | EA | 0 | 799 31-Aug-81 | | | |
| 059 | 8 | 511-2401 | C | SOCKET, IC 24 PIN | RP | P | 1 | P | C | P | EA | 0 | 799 31-Aug-81 | | | |
| 060 | 8 | 511-4001 | C | SOCKET, IC 40 PIN | RP | P | 1 | P | C | P | EA | 0 | 799 31-Aug-81 | | | |
| 061 | 8 | 515-0005 | 1B | CONN,PIN,SINGLE | RP | P | 1 | P | C | P | EA | 0 | C78131-Aug-81 | | | |
| 054 | 8 | 515-0053 | 1C | CONN,HDR,STR,2P<br>P7 | RP | P | 1 | P | C | P | EA | 0 | C78131-Aug-81 | | | |
| 053 | 8 | 515-0082 | 1A | HEADER, 10 PIN RT ANGLE W/O EARS<br>P5 | RP | P | 1 | | C | P | EA | 0 | C48031-Aug-81 | | 16-Nov-82 | |
| 066 | 8 | 515-0150 | 1A | CONN,HDR,RT ANG,5P,.156 CTR,W/LKG<br>P3 | RP | P | 1 | | * | P | EA | 0 | C78113-Nov-81 | | | |
| 067 | 8 | 515-0160 | 1A | CONN,HDR,RT ANG,2P,W/LKG RAMP<br>P4 | RP | P | 1 | | * | P | EA | 0 | C78113-Nov-81 | | | |
| 065 | 8 | 519-0100 | 1B | CONN,PC TAIL,90 DEG,MET.LNG FTPRI<br>P1 | RP | P | 1 | | * | P | EA | 0 | C78113-Nov-81 | | | |
| 049 | 8 | 520-0011 | 1A | CONN,PLUG,CONTACT KEY,'D' SUB<br>P1 | RP | P | 1 | | C | P | EA | 0 | C78131-Aug-81 | | | |
| 079 | 8 | 570-2239 | 1A | WIRE,STRANDED 22 AWG,GREEN,BULK | | * | * | | * | * | FT | 0 | C50915-Oct-83 | | | |
| 068 | 8 | 571-0001 | A | WIRE, BUS BAR, 20 AWG, .5 IN. | EX | X | 7 | | * | U | FT | 0 | P23213-Nov-81 | | 14-Oct-83 | |
| 046 | 8 | 820-0055 | 1D | PCB, CONTROLLER, PROFILE | RP | P | 1 | | * | P | EA | 0 | P17631-Aug-81 | | | |
| 069 | 8 | 835-0150 | A | NUT/WASHER ASSY, (KEPS) 4-40 | EX | P | 7 | | * | P | EA | 0 | 834 13-Nov-81 | | | |
| 001 | 6 | 699-0059 | AB | PURCH. ASSY, POWER SUPPLY PROFILE | VX | P | 1 | | A | P | EA | 0 | P18114-Dec-82 | | | |
| 005 | 6 | 825-0320 | A | LABEL, WARNING PWR SUP PROFILE | EX | P | 7 | | * | P | E | 0 | P10914-Dec-82 | | | |
| 002 | 6 | 860-0200 | 1C | STANDOFF, PLASTIC .188" | EX | P | 7 | | C | P | EA | 0 | C52014-Dec-82 | | | |
| 011 | 6 | 860-0210 | MA | STANDOFF, HEX 6-32 X 1/4 | EX | P | 7 | | * | P | EA | 0 | P109 | | 06-Apr-83 | |
| 003 | 6 | 860-0213 | 1A | STANDOFF,6-32,5/16",METAL JACKNUT | | * | * | | * | * | EA | 0 | C32530-Mar-83 | | | |
| 008 | 6 | 918-0023 | 0 | 1/4" TAN DOT<br>ALTN P/N FOR ITEM 4<br>ALTN QTY 1 | EX | X | 7 | S | C | U | EA | 0 | 14-Dec-82 | | 16-Aug-83 | |
| 004 | 6 | 918-0025 | 0 | 1/4" RED DOT<br>ALTN P/N 918-0023<br>ALTN P/N 918-0029<br>ALTN P/N 918-0031 | EX | X | 7 | S | C | U | BX | 0 | 14-Dec-82 | | 16-Aug-83 | |
| 009 | 6 | 918-0029 | 0 | 1/4" ORANGE DOT<br>ALTN P/N FOR ITEM 4<br>ALTN QTY 1 | EX | X | 7 | S | C | U | EA | 0 | 14-Dec-82 | | 16-Aug-83 | |
| 010 | 6 | 918-0031 | 0 | 1/4" WHITE DOT<br>ALTN P/N FOR ITEM 4<br>ALTN QTY 1 | EX | X | 7 | S | C | U | EA | 0 | 14-Dec-82 | | 16-Aug-83 | |
| 002 | 5 | 656-5140 | 3B | INACT.MFG.SUBASSY,H.D.A.,PROFILE | | * | * | | * | * | EA | 0 | L30514-Dec-82 | | | |
| 005 | 6 | 400-1604 | 1C | SCR 6-32X1/4 PN HD CRS REC STL ZN | EX | X | 7 | | C | P | EA | 0 | C54014-Dec-82 | | | |
| 004 | 6 | 590-0048 | 1B | CABLE, ASSY, INTERF TO ANALOG PCB | SL | P | 1 | | * | P | EA | 0 | P60314-Dec-82 | | | |
| 001 | 7 | 514-0020 | 1B | CONN,CD EDG,IDC,1" 34P,W/O EAR | RP | P | 1 | | * | U | EA | 0 | C78131-Aug-81 | | | |
| 002 | 7 | 513-0035 | 1B | CONN,SKT,INSUL. DISPL.,1" 34P | RP | P | 1 | | C | U | EA | 0 | C78131-Aug-81 | | | |
| 003 | | 547-0204 | 1F | CABLE, FLAT 34 CONDUCTOR | | * | * | | * | * | FT | 0 | C52[illegible] | | | |

EFFECTIVITY DATE: ALL

INDENTED BILLS OF MATERIAL

PARENT PART: A9M0005 I FG, PROFILE, 'GENERIC' DRIVE - USA UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
FRC: A SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E E | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S P | A B | P L | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 004 | 7 | 590-0053 | 3A | REIDENFIFY SEE 569-0204 | RC | P | 1 | | * | P | FT | 0 | C523 | | | 30-Sep-83 | |
| 002 | 6 | 590-0105 | A | CABLE ASSY, #16 AWG GROUND WIRE | | P | * | | * | P | EA | 0 | F18014 | -Dec-82 | | | |
| 003 | 7 | 517-1102 | 1B | TERMINAL, RING TONGUE #8 | | P | * | | * | P | EA | 0 | C34401 | -Mar-82 | | | |
| 002 | 7 | 517-1211 | 1A | TERMINAL, RECEPF 4.75 X .51 TAB | | P | * | | * | P | EA | 0 | C62801 | -Mar-82 | | | |
| 001 | 7 | 570-1601 | A | WIRE, 16 AWG, GRAY, 26/30, 4.80" | | X | * | | * | P | EA | 0 | C05701 | -Mar-82 | | | |
| 003 | 6 | 656-4101 | A | ASSY, PCB TSTD, ANALOG | WT | A | 1 | | * | P | EA | 0 | F11114 | -Dec-82 | | | |
| 001 | 7 | 656-0101 | 1F | ASSY, PCB UNTSTD, ANALOG, PROFILE | WU | A | 1 | | * | P | EA | 0 | L05031 | -Aug-81 | | | |
| 000 | 8 | 050-5005 | 1J | SCHEMATIC, ANALOG BD, PROFILE | D | D | 7 | | * | U | EA | 0 | F69701 | -Mar-82 | | | |
| 050 | 8 | 101-4010 | 1A | RES 1 OHM 1/4W 5%<br>R101 | RP | P | 1 | S | C | P | EA | 0 | C67528 | -Jul-81 | | | |
| 051 | 8 | 101-4101 | 1A | RES 100 OHM 1/4W 5%<br>R4,67 | RP | P | 1 | P | C | P | EA | 0 | C67528 | -Jul-81 | | | |
| 053 | 8 | 101-4102 | 1A | RES 1K OHM 1/4W 5%<br>R2-3,R15,R20-21<br>R38-39,R48,R54,R59<br>R60-62,R85-88<br>R106,R108 | RP | P | 1 | P | C | P | EA | 0 | C67528 | -Jul-81 | | | |
| 068 | 8 | 101-4103 | 1A | RES 10K OHM 1/4W 5%<br>R13,17,42-45,47<br>R49,70,81,117 | RP | P | 1 | P | C | P | EA | 0 | C67528 | -Jul-81 | | | |
| 083 | 8 | 101-4104 | 1A | RES 100K OHM 1/4W 5%<br>R115 | RP | P | 1 | P | C | P | EA | 0 | C67528 | -Jul-81 | | | |
| 080 | 8 | 101-4111 | 1A | RES 110 OHM 1/4W 5%<br>R91,92 | RP | P | 1 | | C | P | EA | 0 | C67528 | -Jul-81 | | | |
| 064 | 8 | 101-4121 | 1A | RES 120 OHMS 1/4W 5%<br>R25,26 | RP | P | 1 | P | C | P | EA | 0 | C67528 | -Jul-81 | | | |
| 077 | 8 | 101-4122 | 1A | RES 1.2K OHM 1/4W 5%<br>R107 | RP | P | 1 | P | C | P | EA | 0 | C67528 | -Jul-81 | | | |
| 075 | 8 | 101-4123 | 1A | RES 12K OHM 1/4W 5%<br>R73 | RP | P | 1 | P | C | P | EA | 0 | C67528 | -Jul-81 | | | |
| 072 | 8 | 101-4151 | 1A | RES 150 OHM 1/4W 5%<br>R36,68,114 | RP | P | 1 | P | C | P | EA | 0 | C67528 | -Jul-81 | | | |
| 061 | 8 | 101-4152 | 1A | RES 1.5K OHM 1/4W 5%<br>R7,82,83 | RP | P | 1 | P | C | P | EA | 0 | C67528 | -Jul-81 | | | |
| 056 | 8 | 101-4182 | 1A | RES 1.8K OHM 1/4W 5%<br>R69 | RP | P | 1 | P | C | P | EA | 0 | C67528 | -Jul-81 | | | |
| 081 | 8 | 101-4201 | 1A | RES 200 OHM 1/4W 5%<br>R110 | RP | P | 1 | P | C | P | EA | 0 | C67528 | -Jul-81 | | | |
| 069 | 8 | 101-4203 | 1A | RES 20.0K OHM 1/4W 5%<br>R16,50 | RP | P | 1 | P | C | P | EA | 0 | C76028 | -Jul-81 | | | |
| 062 | 8 | 101-4220 | 1A | RES 22 OHM 1/4W 5%<br>R23,24,32 | RP | P | 1 | P | C | P | EA | 0 | C67528 | -Jul-81 | | | |
| 055 | 8 | 101-4241 | 1A | RES 240 OHM 1/4W 5%<br>R18,19 | RP | P | 1 | P | C | P | EA | 0 | C67528 | -Jul-81 | | | |
| 079 | 8 | 101-4242 | 1A | RES 2.4K OHM 1/4W 5%<br>R80,40,41 | RP | P | 1 | P | C | P | EA | 0 | C67528 | -Jul-81 | | | |
| 067 | 8 | 101-4243 | 1A | RES 24K OHM 1/4W 5%<br>R35 | RP | P | 1 | P | C | P | EA | 0 | C67528 | -Jul-81 | | | |
| 066 | 8 | 101-4244 | 1A | RES 240K OHM 1/4W 5%<br>[illegible] | RP | P | 1 | P | C | P | EA | 0 | C67528 | -Jul-81 | | | |

EFFECTIVITY DATE: ALL INDENTED BILLS OF MATERIAL

PARENT PART: A9M0005 1 FG, PROFILE, 'GENERIC' DRIVE - USA UM: EA PROD CODE: DH FCN: F354 ASSEMBLY QTY: 1
ERC: A SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION / REMARKS | PR CD | S C | I Y | S P | A R | P I | UM | EXTENDED QTY PER | ECN CHG / START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 078 | 8 | 101-4272 | 1A | RES 2.7K OHM 1/4W 5%<br>R74 | RP | P | 1 | P | C | P | EA | 0 | C67528-Jul-81 | | | |
| 082 | 8 | 101-4301 | 1A | RES 300 OHM 1/4W 5%<br>R111 | RP | P | 1 | P | C | P | EA | 0 | C67528-Jul-81 | | | |
| 070 | 8 | 101-4331 | 1A | RES 330 OHM 1/4W 5%<br>R89,90 | RP | P | 1 | P | C | P | EA | 0 | C67528-Jul-81 | | | |
| 073 | 8 | 101-4332 | 1A | RES 3.3K OHM 1/4W 5%<br>R100,76 | RP | P | 1 | P | C | P | EA | 0 | C67528-Jul-81 | | | |
| 049 | 8 | 101-4390 | 1A | RES 39 OHM 1/4W 5%<br>R78,R112 | RP | P | 1 | P | C | P | EA | 0 | C67528-Jul-81 | | | |
| 054 | 8 | 101-4391 | 1A | RES 390 OHM 1/4W 5%<br>R55 | RP | P | 1 | P | C | P | EA | 0 | C67528-Jul-81 | | | |
| 060 | 8 | 101-4392 | 1A | RES 3.9K OHM 1/4W 5%<br>R9,8,113,1,27<br>R118,119 | RP | P | 1 | P | C | P | EA | 0 | C67513-Apr-83 | | | |
| 052 | 8 | 101-4471 | 1A | RES 470 OHM 1/4W 5%<br>R37,52-53,77 | RP | P | 1 | P | C | P | EA | 0 | C67528-Jul-81 | | | |
| 084 | 8 | 101-4473 | 1A | RES 47K OHM 1/4W 5%<br>R116,71 | RP | P | 1 | P | C | P | EA | 0 | C67528-Jul-81 | | | |
| 065 | 8 | 101-4511 | 1A | RES 510 OHM 1/4W 5%<br>R63,64,29,30,28 | RP | P | 1 | P | C | P | EA | 0 | C67528-Jul-81 | | | |
| 071 | 8 | 101-4561 | 1A | RES 560 OHM 1/4W 5%<br>R99 | RP | P | 1 | P | C | P | EA | 0 | C67528-Jul-81 | | | |
| 045 | 8 | 101-4681 | 1A | RES 680 OHMS 1/4W 5%<br>R11-12,R22 | RP | P | 1 | P | C | P | EA | 0 | C67528-Jul-81 | | | |
| 074 | 8 | 101-4751 | 1A | RES 750 OHM 1/4W 5%<br>R75,79 | RP | P | 1 | | C | P | EA | 0 | C67528-Jul-81 | | | |
| 063 | 8 | 101-4752 | 1A | RES 7.5K OHM 1/4W 5%<br>R5,6,33,34 | RP | P | 1 | P | C | P | EA | 0 | C67528-Jul-81 | | | |
| 076 | 8 | 101-4822 | 1A | RES 8.2K OHM 1/4W 5%<br>R72 | RP | P | 1 | P | C | P | EA | 0 | C67528-Jul-81 | | | |
| 057 | 8 | 101-4823 | 1A | RES 82K OHM 1/4W 5%<br>R46 | RP | P | 1 | | C | P | EA | 0 | C67528-Jul-81 | | | |
| 048 | 8 | 108-1543 | 1A | RES 1.54K OHM 1/4W 1%<br>R84 | RP | P | 1 | | C | P | EA | 0 | C75828-Jul-81 | | | |
| 042 | 8 | 108-1783 | 1A | RES 1.78K OHM 1/4W 1%<br>R10 | RP | P | 1 | | C | P | EA | 0 | C75828-Jul-81 | | | |
| 041 | 8 | 108-1963 | 1A | RES 1.96K OHM 1/4W 1%<br>R105,104 | RP | P | 1 | | * | P | EA | 0 | C75801-Mar-82 | | | |
| 047 | 8 | 108-3833 | 1A | RES 3.83K OHM 1/4W 1%<br>R93,R95-96,R97 | RP | P | 1 | | * | P | EA | 0 | C75831-Jul-81 | | | |
| 039 | 8 | 108-3923 | 1A | RES 3.92K OHM 1/4W 1%<br>R65,66 | RP | P | 1 | P | C | P | EA | 0 | C75828-Jul-81 | | | |
| 046 | 8 | 108-4531 | 1A | RES 45.3 OHM 1/4W 1%<br>R14 | RP | P | 1 | | C | P | EA | 0 | C75828-Jul-81 | | | |
| 043 | 8 | 108-5623 | 1A | RES 5.62K OHM 1/4W 1%<br>R94,R9[illegible] | RP | P | 1 | | C | P | EA | 0 | C75828-Jul-81 | | | |
| 106 | 8 | 109 000[illegible] | [illegible] | POT, TRIM 1K OHM [illegible] | RP | P | 1 | P | C | P | EA | 0 | 442 10-Oct-83 | | | |
| 040 | 8 | 10[illegible] 0005 | A | POT,TRIM 50[illegible] OHM,[illegible]<br>[illegible] | RP | P | 1 | | * | P | EA | 0 | C04518-May-8[illegible] | | 09-Oct-8[illegible] | |

EFFECTIVITY DATE: all

INDENTED BILLS OF MATERIAL

PARENT PART: A9M0005 1 FG, PROFILE, 'GENERIC' DRIVE - USA UM: EA PROD CODE: DH ECN: F354 ASSEMBLY QTY: 1
ERC: A SRCE CODE: G TYPE: 1 ARC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E F | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S F | A R | P I | UM | EXTENDED QTY PER | ECN CHG / START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 098 | 8 | 109-0410 | 1A | POT, 500 OHM 18 - 25 TURNS | RP | P | 1 | | C | P | EA | 0 | C50428-Jul-81 | | 02-Mar-82 | |
| 099 | 8 | 109-0420 | MA | POT, 1 TURN .250 DIA, 500 OHMS<br>ALTN P/N FOR ITEM 40 | RP | P | 1 | | C | P | EA | 0 | P10513-May-82 | | 09-Oct-83 | |
| 038 | 8 | 111-0023 | 1A | RES NETWORK 7 X 560 OHM 5%<br>RP2-8 | RP | P | 1 | | C | P | EA | 0 | C67528-Jul-81 | | | |
| 094 | 8 | 111-0024 | 1A | RES NETWORK 7 X 4.7K OHM 5%<br>RP-1 | RP | P | 1 | | C | P | EA | 0 | C67528-Jul-81 | | | |
| 059 | 8 | 127-0100 | 1B | CAP TANT 4.7 uF 20% 10V<br>C59 | RP | P | 1 | | * | P | EA | 0 | C59928-Jul-81 | | | |
| 037 | 8 | 127-0101 | 1B | CAP TANT 10 uF 20% 15/16V<br>C38-C40 | RP | P | 1 | | * | P | EA | 0 | C59928-Jul-81 | | | |
| 029 | 8 | 130-0002 | 1B | CAP CER AXIAL .01 UF +80%-20% 25V<br>C1,2,6,7 | RP | P | 1 | P | C | P | EA | 0 | C93928-Jul-81 | | | |
| 097 | 8 | 130-0003 | 1B | CAP CER AXIAL .1 UF +80%-20% 25V<br>C13,C14 | RP | P | 1 | P | C | P | EA | 0 | C939 | | 14-Apr-83 | |
| 028 | 8 | 130-0007 | 1B | CAP CER AXIAL .1 UF +80%-20% 25V<br>C3-5,10-16,21,22,25,<br>C27,35-37,42-45,47<br>C48-51,53,55-57,63 | RP | P | 1 | | C | P | EA | 0 | C93901-Mar-82 | | | |
| 031 | 8 | 130-0200 | 1A | CAP CER .001 uF 10% 25V<br>C24, C32 | RP | P | 1 | | C | P | EA | 0 | C59928-Jul-81 | | | |
| 030 | 8 | 130-0201 | 1A | CAP CER .0022 uF 10% 25V<br>C19,23,28-31,26,62 | RP | P | 1 | | C | P | EA | 0 | C59928-Jul-81 | | | |
| 036 | 8 | 137-5401 | 1A | CAP DIP MICA 20 pF 5% 500V<br>C61 | RP | P | 1 | | C | P | EA | 0 | C54128-Jul-81 | | | |
| 035 | 8 | 137-5701 | 1A | CAP DIP MICA 47 pF 5% 500V<br>C34 | RP | P | 1 | P | C | P | EA | 0 | C54128-Jul-81 | | | |
| 034 | 8 | 137-5801 | 1A | CAP DIP MICA 75 pF 5% 500V<br>C8 | RP | P | 1 | | C | P | EA | 0 | C54128-Jul-81 | | | |
| 032 | 8 | 137-6101 | 1A | CAP DIP MICA 100 pF 5% 500V<br>C33 | RP | P | 1 | P | C | P | EA | 0 | C54128-Jul-81 | | | |
| 033 | 8 | 137-6301 | 1A | CAP DIP MICA 150 pF 5% 500V<br>C9, C18, C17, C20 | RP | P | 1 | | C | P | EA | 0 | C54128-Jul-81 | | | |
| 027 | 8 | 151-4701 | 1C | INDUCTOR, 5.6 uH 10%<br>L1, L2 | RP | P | 1 | | * | P | EA | 0 | C39528-Jul-81 | | | |
| 021 | 8 | 156-0100 | A | DELAY LINE 14 PIN DIP 100 OHM, 50<br>DLY 2 | RP | P | 1 | | * | P | EA | 0 | 792 28-Jul-81 | | | |
| 022 | 8 | 156-0110 | A | DELAY LINE 14 PIN DIP 500 OHM 100<br>DLY 1 | RP | P | 1 | | * | P | EA | 0 | 792 28-Jul-81 | | | |
| 007 | 8 | 301-0045 | A | IC, 7445<br>U4 | RI | P | 1 | | C | P | EA | 0 | C06328-Jul-81 | | | |
| 001 | 8 | 301-0074 | A | IC, 7474<br>U2 | RI | P | 1 | P | C | P | EA | 0 | C06328-Jul-81 | | | |
| 005 | 8 | 305-0014 | A | IC, 74LS14<br>U30 | RI | P | 1 | P | B | P | EA | 0 | 442 28-Jul-81 | | | |
| 002 | 8 | 305-0174 | A | IC, 74LS174<br>[illegible] | RI | P | 1 | P | B | P | EA | 0 | 442 28-Jul-81 | | | |
| 004 | 8 | 30[illegible]-0064 | A | IC, 74S64<br>U2[illegible] | RI | P | 1 | | B | P | EA | 0 | C06328-Jul-81 | | | |
| 017 | [illegible] | [illegible]-0102 | A | [illegible] | RI | P | 1 | | C | P | EA | 0 | 741 28-Jul-81 | | | |

EFFECTIVITY DATE: All

INDENTED BILLS OF MATERIAL

PARENT PART: A9M0005 1 FG, PROFILE, 'GENERIC' DRIVE - USA UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
ERC: A SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | F R | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S P | A B | P L | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | U18 | | | | | | | | | | | | | |
| 010 | 8 | 325-0107 | A | TRIPLE 2-INPT EXCL OR/EXCL NOR GA<br>U10, U15 | RI | P | 1 | | C | P | EA | 0 | 741 | 28-Jul-81 | | | |
| 008 | 8 | 325-0114 | A | TRIPLE LINE RECEIVER<br>U5, U14 | RI | P | 1 | | C | P | EA | 0 | 741 | 28-Jul-81 | | | |
| 009 | 8 | 325-0116 | A | TRIPLE LINE RECEIVER<br>U26, U9 | RI | P | 1 | | C | P | EA | 0 | 741 | 28-Jul-81 | | | |
| 012 | 8 | 325-0117 | A | DL 2-WID 2-3-INPT OR-AND/OR-AND-I<br>U16 | RI | P | 1 | | C | P | EA | 0 | 741 | 28-Jul-81 | | | |
| 011 | 8 | 325-0131 | B | IC ECL HIGH SPEED DUAL D FLIP-FLO<br>U11,17,19,20,21,22 | RI | P | 1 | | C | P | EA | 0 | C255 | 28-Jul-81 | | | |
| 006 | 8 | 327-0453 | A | IC, DUAL PERIPHERAL DRIVES<br>U3 | RI | P | 1 | | * | P | EA | 0 | 757 | 28-Jul-81 | | | |
| 096 | 8 | 335-0007 | A | PROG HEX 16 INPT REG AND-OR GT AR | RL | P | 1 | P | B | P | EA | 0 | 642 | 28-Jul-81 | | 02-Mar-82 | |
| 003 | 8 | 341-0069 | A | MEMPAL<br>PROG HEX 16 INPT<br>REG AND-OR GT ARY<br>U28 | RL | A | 1 | | * | P | EA | 0 | P105 | 01-Mar-82 | | | |
| 014 | 8 | 351-2907 | A | IC TRANS ARRAY QUAD PNP GEN PURPO<br>U31, U23, U12 | RP | P | 1 | | C | P | EA | 0 | 750 | 28-Jul-81 | | | |
| 016 | 8 | 351-3127 | A | TRANSISTOR,ARRAY NPN HIGH FREQ.<br>U7 | RP | P | 1 | | C | P | EA | 0 | 750 | 28-Jul-81 | | | |
| 023 | 8 | 351-6700 | A | IC, TRANS. ARRAY QUAD COMP. PAIRS<br>U1, U24<br>ITEM 100-103 ALT P/N | RI | P | 1 | | C | P | EA | 0 | 750 | 28-Jul-81 | | | |
| 058 | 8 | 353-0005 | A | IC REG. +5V 100MA TO 92, 3 TERMNL<br>RG1 | RI | P | 1 | | C | P | EA | 0 | 792 | 28-Jul-81 | | | |
| 018 | 8 | 353-0319 | A | IC, HIGH SPEED DUAL COMPARATOR<br>U13 | RI | P | 1 | | C | P | EA | 0 | 750 | 28-Jul-81 | | | |
| 017 | 8 | 353-0353 | A | DUAL FET OP AMP/BUFFER<br>U25,U8 | RP | P | 1 | | C | P | EA | 0 | 750 | 28-Jul-81 | | | |
| 015 | 8 | 353-0592 | A | IC, VIDEO AMPLIFIER<br>U6 | RI | P | 1 | | C | P | EA | 0 | 750 | 28-Jul-81 | | | |
| 024 | 8 | 371-4152 | 1A | DIODE FAST SWITCH 1N4152 500mW 30<br>CR1-14, CR16-21,<br>CR23-24, CR26 | RP | P | 1 | | C | P | EA | 0 | C538 | 28-Jul-81 | | | |
| 100 | 8 | 372-2222 | 1A | TRANS,NPN,SWITCHING AND AMP 2N222<br>ALT P/N FOR ITEM 23<br>U1-QTY 2 | | * | * | | * | * | EA | 0 | C403 | 08-Jul-83 | | | |
| 101 | 8 | 372-2907 | A | XSTR,2N2907, PNP SWITCH & AMPLIFI<br>ALT P/N FOR ITEM 23<br>U1-QTY 2 | | * | * | | * | * | EA | 0 | C259 | 08-Jul-83 | | | |
| 102 | 8 | 372-3904 | A | TRANSISTOR,NPN SW.&AMP. 2N3904<br>ALT P/N FOR ITEM 23<br>U24-QTY 2 | RP | P | 1 | P | C | P | EA | 0 | C303 | 08-Jul-83 | | | |
| 103 | 8 | 372-3906 | 1P | TRANSISTOR,PNP SW.&AMP. 2N3906<br>ALT P/N FOR ITEM 23<br>U24-QTY 2 | RP | P | 1 | P | C | P | EA | 0 | C768 | 08-Jul-83 | | | |
| 026 | 8 | 375-0010 | 1A | DIODE REFERENCE 10mA 1.20<br>CR11 | RP | P | 1 | | C | P | EA | 0 | C538 | 28-Jul-81 | | | |

EFFECTIVITY DATE: ALL

I N D E N T E D   B I L L S   O F   M A T E R I A L

PARENT PART: A9M0005  1  FG, PROFILE, 'GENERIC' DRIVE - USA  UM: EA  PROD CODE: DH  ECN: P354  ASSEMBLY QTY: 1
ERC: A  SRCE CODE: G  TYPE: 1  ABC: *  PLAN CODE: P  DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | ER | PART DESCRIPTION / REMARKS | PR CD | S C | I Y | S P | A B | P L | UM | EXTENDED QTY PER | ECN CHG / START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 019 | 8 | 375-0012 | 1A | DIODE DUAL VOLT VAR CAP 200mA 32V | RP | P | 1 | | * | P | EA | 0 | C53828-Jul-81 | | | |
| | | | | Q2 | | | | | | | | | | | | |
| 020 | 8 | 376-0016 | A | FET, N-CHANNEL VOLT CONTRL RESIS. | RP | P | 1 | | * | P | EA | 0 | C30328-Jul-81 | | | |
| | | | | U1 | | | | | | | | | | | | |
| 090 | 8 | 511-0801 | C | SOCKET, IC 8 PIN | RP | P | 1 | P | C | P | EA | 0 | 799 28-Jul-81 | | 14-Apr-83 | |
| 091 | 8 | 511-1401 | C | SOCKET, IC 14 PIN | RP | P | 1 | P | C | P | EA | 0 | 799 28-Jul-81 | | 14-Apr-83 | |
| 092 | 8 | 511-1601 | C | SOCKET, IC 16 PIN | RP | P | 1 | P | C | P | EA | 0 | 799 28-Jul-81 | | 14-Apr-83 | |
| 093 | 8 | 511-2001 | C | SOCKET, IC 20 PIN | RP | P | 1 | P | C | P | EA | 0 | 799 28-Jul-81 | | 14-Apr-83 | |
| 089 | 8 | 515-0005 | 1B | CONN,PIN,SINGLE | RP | P | 1 | P | C | P | EA | 0 | C78128-Jul-81 | | | |
| 087 | 8 | 515-0120 | 1A | CONN,HDR,SGL ROW,4P | RP | P | 1 | | * | P | EA | 0 | C78128-Jul-81 | | 02-Mar-82 | |
| 085 | 8 | 515-0130 | 1B | CONN,HDR,RT ANG,DBL ROW,8/16P | RP | P | 1 | | * | P | EA | 0 | C78128-Jul-81 | | | |
| | | | | J5 | | | | | | | | | | | | |
| 088 | 8 | 515-0131 | 1B | CONN,HDR,RT ANG,DBL ROW,17/34P | RP | P | 1 | | C | P | EA | 0 | C78101-Mar-82 | | 28-Aug-83 | |
| | | | | J2 | | | | | | | | | | | | |
| 086 | 8 | 515-0140 | 1A | CONN,HDR,RT ANG,5P,W/LKG RAMP | RP | P | 1 | | * | P | EA | 0 | C78128-Jul-81 | | | |
| | | | | J6-8 | | | | | | | | | | | | |
| 105 | 8 | 515-0380 | 1A | CONN,HDR,RT ANG,DBL ROW,17/34P | | * | * | | * | * | EA | 0 | C78129-Aug-83 | | | |
| | | | | J2 | | | | | | | | | | | | |
| 104 | 8 | 550-0101 | 1C | TUBING, HEAT SHRINK 1/4 ID BLACK | EX | X | 7 | P | C | P | FT | 0 | C50308-Jul-83 | | | |
| | | | | USE W/ALT P/N | | | | | | | | | | | | |
| | | | | 100-101 ON U1 | | | | | | | | | | | | |
| 095 | 8 | 820-0054 | AE | PCB, ANALOG PROFILE | RP | P | 1 | | * | P | EA | 0 | P21401-Mar-82 | | | |
| 001 | 6 | 699-0054 | A | ASSY, O.E.M. HEAD DISC (H.D.A.) | VX | A | 1 | P | A | P | EA | 0 | 600 14-Dec-82 | | | |
| 006 | 4 | 810-0090 | 1A | DRESS PANEL, DRIVE, PROFILE | RM | P | 1 | | * | P | EA | 0 | P56714-Dec-82 | | | |
| 007 | 4 | 810-0091 | 1B | DRESS PANEL, PWR SPLY PROFILE | RM | P | 1 | | * | P | EA | 0 | P64414-Dec-82 | | | |
| 012 | 4 | 825-0207 | B | LABEL, FCC NON COMPLIANCE APPLE 3 | EX | X | 7 | P | C | P | EA | 0 | P59321-Mar-83 | | | |
| 004 | 3 | 656-6121 | 3B | INACT.ASSY,CHASSIS,PROFILE-CLASS | | * | * | | * | * | EA | 1 | L30512-Dec-83 | | | |
| 003 | 4 | 400-1606 | 1C | SCR 6-32X3/8 PN HD CRS REC STL ZN | EX | X | 1 | P | C | P | EA | 1 | C54012-Dec-83 | | | |
| 013 | 4 | 403-1606 | 1C | SCR 6-32X3/8 PN CRS REC STL BL ZI | EX | X | 7 | S | C | U | EA | 16 | C54012-Dec-83 | | | |
| 009 | 4 | 430-1001 | 1C | SCR TAP 8-18X.437 PN CRS STL ZN | EX | X | 7 | P | C | P | EA | 3 | C54012-Dec-83 | | | |
| 002 | 4 | 656-5121 | 3A | INACT.SUBASSY,BASE,PROFILE-CLASS | | * | * | | * | * | EA | 1 | L30512-Dec-83 | | | |
| 005 | 5 | 400-1604 | 1C | SCR 6-32X1/4 PN HD CRS REC STL ZN | EX | X | 7 | | C | P | EA | 2 | C54012-Dec-83 | | | |
| 011 | 5 | 400-1608 | 1C | SCR 6-32X1/2 PN HD CRS REC STL ZN | EX | X | 7 | | C | P | EA | 1 | C54012-Dec-83 | | | |
| 012 | 5 | 436-1006 | 1C | SCR TAP 4-24X.250 PN CRS REC STL | | * | * | | * | * | EA | 1 | C54012-Dec-83 | | | |
| 001 | 5 | 699-5010 | 1A | PURCH ASSY,COATD BTM CVR,PRFLE-B | | * | * | | * | * | EA | 1 | P67612-Dec-83 | | | |
| 001 | 6 | 656-5021 | 6A | SUBASSY COVER,BOTTOM,PROFILE | | * | * | | * | * | EA | 1 | P40812-Dec-83 | | | |
| 002 | 7 | 805-0086 | 1A | SHIELD,CSA PROFILE | | * | * | | * | * | EA | 1 | P40801-Apr-83 | | | |
| 001 | 7 | 815-5008 | 1C | COVER, BOTTOM, PROFILE | RM | P | 1 | | * | P | EA | 1 | P40801-Apr-83 | | | |
| 008 | 5 | 805-0104 | A | SUPPORT, PROFILE | RP | P | 1 | | * | P | EA | 1 | P16812-Dec-83 | | | |
| 002 | 5 | 805-5022 | 1A | SUBPANEL,REAR,PROFILE | | * | * | | * | * | EA | 1 | P64412-Dec-83 | | | |
| 003 | 5 | 810-0095 | 1A | COVER DRIVE,BOTTOM,PROFILE | | * | * | | * | * | EA | 1 | P40812-Dec-83 | | | |
| 004 | 5 | 865-0005 | MA | FOOT, .52HT, SQ | EX | X | 7 | P | C | P | EA | 6 | 545 12-Dec-83 | | | |
| 015 | 4 | 656-5130 | 3D | INACT.MFG SUBASSY,COVER,PROFILE | | * | * | | * | * | EA | 1 | L30506-Jan-84 | | | |
| 004 | 5 | 590-0047 | 1B | CABLE, ASSY, LED, PROFILE | RC | P | 1 | | * | P | EA | 1 | P46414-Dec-82 | | | |
| 008 | 6 | 517-0041 | 1A | CONN,RCPT,INSUL. DISPL.,2P | RP | P | 1 | | * | U | EA | 1 | C78131-Aug-81 | | | |
| 003 | 6 | 550-0010 | A | TUBING, BRAIDED, 1/8 DIA. | EX | X | 7 | | * | U | IN | 24.5000 | P10931-Aug-81 | | | |
| 007 | 6 | 550-0101 | 1C | TUBING, HEAT SHRINK 1/4 ID BLACK | EX | X | 7 | P | C | P | FT | 2 | C50331-Aug-81 | | | |
| 006 | 6 | 550-0103 | 1C | TUBING, HEAT SHRINK 1/16 ID BLACK | EX | X | 7 | P | C | P | FT | 1 | C50331-Aug-81 | | | |
| 004 | 6 | 561-2600 | B | WIRE, BLACK 26 AWG, 7 X 34 | EX | X | 7 | P | * | P | FT | 25 | 764 31-Aug-81 | | | |
| 005 | 6 | 561-2622 | F | WIRE, 26 AWG STRAND RED | EX | X | 7 | | * | U | FT | 25 | [illegible]-Aug-81 | | | |

EFFECTIVITY DATE: ALL

I N D E N T E D B I L L S O F M A T E R I A L

PARENT PART: A9M0005 1 FG, PROFILE, "GENERIC" DRIVE - USA UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
ERC: A SRCL CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S P | A B | P L | UM | EXTENDED QTY PER | ECN CHG / START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | 6 | 710-0004 | MA | LED, RED APPLE III DISKCABLE | RP | X | 1 | P | C | P | EA | 1 | 552 31-Aug-81 | | | |
| 002 | 6 | 815-0190 | 0 | GROMET, PANEL MTG. FOR RECT. LAMP | RM | X | 1 | P | C | P | EA | 0 | 442 31-Aug-81 | | 26-Apr-83 | |
| 001 | 5 | 699-5011 | 1B | PURCH ASSY.COATD TOP CVR,PRFLE-B | | * | * | | * | * | EA | 1 | L05112-Dec-83 | | | |
| 001 | 6 | 815-5007 | 1C | COVER, TOP, PROFILE | RM | P | 1 | | * | P | EA | 1 | P40812-Dec-83 | | | |
| 008 | 5 | 815-0190 | 0 | GROMET, PANEL MTG. FOR RECT. LAMP | RM | X | 1 | P | C | P | EA | 1 | 442 27-Apr-83 | | | |
| 009 | 5 | 815-5007 | 1C | COVER, TOP, PROFILE | RM | P | 1 | | * | P | EA | 0 | P408 | | 11-Dec-83 | |
| 005 | 5 | 825-0311 | 1B | LABEL, LOGO 16MM BY 16MM | EX | X | 7 | P | C | P | EA | 1 | P51414-Dec-82 | | 15-Feb-83 | |
| 006 | 5 | 825-0313 | 1B | LABEL, NAMEPLATE, PROFILE | EX | P | 7 | | * | P | EA | 1 | P51414-Dec-82 | | 15-Feb-83 | |
| 007 | 5 | 825-0315 | 1C | LABEL, LED PROFILE | EX | P | 7 | | * | P | EA | 1 | P51414-Dec-82 | | 15-Feb-83 | |
| 003 | 5 | 830-0025 | 3A | INACTIVE,REIDENTIFIED SEE 830-002 | | X | * | | * | P | EA | 2 | C61114-Dec-82 | | | |
| 002 | 5 | 835-0005 | 1B | NUT, SPEED "J" TYPE SIZE 8 | EX | X | 7 | P | C | P | EA | 3 | C74414-Dec-82 | | | |
| 001 | 4 | 656-5151 | 3A | INACT.SUBASY,HDA/PWR SUP,PRFL-CLS | | * | * | | * | * | EA | 1 | L30512-Dec-83 | | | |
| 004 | 5 | 159-0001 | B | TOROID, FERRITE | EX | P | 1 | P | C | P | EA | 2 | C-4 12-Dec-83 | | | |
| 003 | 5 | 341-0171 | A | MICROPRCSR-2K PROG ROM FORR PROFI | | * | * | | * | * | EA | 1 | P26612-Dec-83 | | | |
| 001 | 5 | 656-5111 | 3B | INACT.SUBASY,PWR SPLY,PROFLE-CLS | | * | * | | * | * | EA | 1 | L30512-Dec-83 | | | |
| 007 | 6 | 400-1603 | 1C | SCR 6-32X3/16 PN HD CRS REC STL Z | EX | P | 7 | | * | P | EA | 1 | C54012-Dec-83 | | | |
| 008 | 6 | 400-1606 | 1C | SCR 6-32X3/8 PN HD CRS REC STL ZN | EX | X | 1 | P | C | P | EA | 1 | C54012-Dec-83 | | | |
| 009 | 6 | 564-0010 | 1A | STRAP, GROUND, BRAIDED, 2.75" LON | | * | * | | * | * | EA | 1 | C70712-Dec-83 | | | |
| 006 | 6 | 656-4102 | MC | ASSY, PCB TSTD, CONTROLLER | WT | A | 1 | | * | P | EA | 1 | P26612-Dec-83 | | | |
| 002 | 7 | 337-8603 | B | IC SOCKET MICROPRO. W/24P PIGGYBA U25 | RL | P | 1 | | * | P | EA | 1 | C14805-May-82 | | 14-Oct-82 | |
| 001 | 7 | 656-0102 | 1M | ASSY,PCB,UNTSTD,CONTROLLER,PROFIL | WU | A | 1 | | * | P | EA | 1 | P65131-Aug-81 | | | |
| 000 | 8 | 050-5006 | 1E | SCHEMATIC, CONTROLLER BD, PROFILE | D | D | 7 | | * | U | EA | 0 | P65104-Jan-82 | | | |
| 063 | 8 | 101-4101 | 1A | RES 100 OHM 1/4W 5% R20,R21 | RP | P | 1 | P | C | P | EA | 2 | C67531-Aug-81 | | | |
| 038 | 8 | 101-4102 | 1A | RES 1K OHM 1/4W 5% R15 | RP | P | 1 | P | C | P | EA | 1 | C67531-Aug-81 | | 14-Oct-83 | |
| 016 | 8 | 101-4103 | 1A | RES 10K OHM 1/4W 5% R19 | RP | P | 1 | P | C | P | EA | 1 | C67531-Aug-81 | | | |
| 036 | 8 | 101-4152 | 1A | RES 1.5K OHM 1/4W 5% R9,R10 | RP | P | 1 | P | C | P | EA | 2 | C67531-Aug-81 | | | |
| 040 | 8 | 101-4201 | 1A | RES 200 OHM 1/4W 5% R17 | RP | P | 1 | P | C | P | EA | 1 | C67531-Aug-81 | | | |
| 042 | 8 | 101-4303 | 1A | RES 30K OHM 1/4W 5% R1,R2,R4,R5 | RP | P | 1 | P | C | P | EA | 4 | C67525-Mar-83 | | | |
| 037 | 8 | 101-4332 | 1A | RES 3.3K OHM 1/4W 5% R3,R6,R7,R8, R11,R12,R13,R18 | RP | P | 1 | P | C | P | EA | 8 | C67531-Aug-81 | | | |
| 075 | 8 | 101-4333 | 1A | RES 33K OHM 1/4W 5% R1,R2,R4,R5 | RP | P | 5 | P | C | P | EA | 4 | C675 | | 24-Mar-83 | |
| 039 | 8 | 101-4392 | 1A | RES 3.9K OHM 1/4W 5% R14 | RP | P | 1 | P | C | P | EA | 1 | C67531-Aug-81 | | 14-Oct-83 | |
| 041 | 8 | 101-4510 | 1A | RES 51 OHM 1/4W 5% R16 | RP | P | 1 | P | C | P | EA | 1 | C67531-Aug-81 | | | |
| 077 | 8 | 101-4512 | 1A | RES 5.1K OHM 1/4W 5% R22 | RP | P | 1 | P | C | P | EA | 1 | C67525-Mar-83 | | | |
| 045 | [illegible] | 111-0021 | 1A | RES NETWORK [illegible] 2K OHM 5% RP1 | RP | P | 1 | P | C | P | EA | 1 | C67531-Aug-81 | | | |
| [illegible] | [illegible] | 111-0022 | 1A | RES NETWORK [illegible] 10K OHM 5% RP2 | RP | P | 1 | P | C | P | EA | 1 | C67531-Aug-81 | | | |

EFFECTIVITY DATE: ALL

INDENTED BILLS OF MATERIAL

PARENT PART: A9M0005 1 FG, PROFILE, 'GENERIC' DRIVE - USA UM: EA PROD CODE: DH ECN: F354 ASSEMBLY QTY: 1
ERC: A SRCE CODE: G TYPE: 1 ARC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S P | A R | P L | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 070 | 8 | 112-0102 | 1B | RES ARRAY 8 X 47 OHM 10% | RP | P | 1 | P | C | P | EA | 2 | C675 | 31-Aug-81 | | 12-Nov-81 | |
| 001 | 8 | 112-0105 | 1B | RES ARRAY 8 X 330 OHM<br>U1,U2 | RP | P | 1 | | * | P | EA | 2 | C675 | 13-Nov-81 | | 06-Nov-83 | |
| 081 | 8 | 112-0107 | 1B | RES ARRAY 8 X 100 OHM<br>U1,U2 | | * | * | | * | * | EA | 2 | C675 | 07-Nov-83 | | | |
| 043 | 8 | 125-5701 | 1B | CAP ELECT 47 uF -10%+75% 10V<br>C8,C21,C29,C30 | RP | P | 1 | | C | P | EA | 4 | C772 | 31-Aug-81 | | | |
| 045 | 8 | 130-0007 | 1B | CAP CER AXIAL .1 UF +80%-20% 25V | RP | P | 1 | | C | P | EA | 31 | C939 | 07-Apr-83 | | | |
| 032 | 8 | 197-0017 | A | CRYSTAL, 10MHz | EX | P | 7 | | * | P | EA | 1 | 792 | 31-Aug-81 | | 14-Oct-83 | |
| 078 | 8 | 197-0502 | 1A | CLOCK OSC,CRYSTAL 10 MHz (TTL) | | * | * | | * | * | EA | 1 | C576 | 15-Oct-83 | | | |
| 080 | 8 | 197-0504 | 1A | CLOCK OSCILLATOR,CRYSTAL,10 MHz<br>ALT FOR ITEM 78<br>ALT QTY 1 | | * | * | | * | * | EA | 0 | C584 | 16-Oct-83 | | | |
| 029 | 8 | 301-0006 | A | IC, 7406<br>U41 | EX | P | 7 | | * | P | EA | 1 | C063 | 31-Aug-81 | | | |
| 009 | 8 | 305-0000 | A | IC, 74LS00N<br>U15,U26 | RI | P | 1 | P | B | P | EA | 2 | 442 | 31-Aug-81 | | | |
| 026 | 8 | 305-0002 | A | IC, 74LS02N<br>U31 | RI | P | 1 | P | B | P | EA | 1 | 442 | 31-Aug-81 | | | |
| 025 | 8 | 305-0008 | A | IC, 74LS08<br>U32 | RI | P | 1 | P | B | P | EA | 1 | 442 | 31-Aug-81 | | | |
| 017 | 8 | 305-0014 | A | IC, 74LS14<br>U23 | RI | P | 1 | P | B | P | EA | 1 | 442 | 31-Aug-81 | | | |
| 027 | 8 | 305-0038 | A | IC, 74LS38 QUAD 2 INPUT BUFFER<br>U24 | RI | P | 1 | P | B | P | EA | 1 | 649 | 31-Aug-81 | | | |
| 019 | 8 | 305-0109 | A | IC, 74LS109<br>U36 | RI | P | 1 | P | B | P | EA | 1 | 442 | 31-Aug-81 | | | |
| 014 | 8 | 305-0153 | A | IC, 74LS153<br>U6 | RI | P | 1 | P | B | P | EA | 1 | 442 | 31-Aug-81 | | | |
| 006 | 8 | 305-0161 | A | IC, 74LS161<br>U10,U16,U17 | RI | P | 1 | P | B | P | EA | 3 | 442 | 31-Aug-81 | | | |
| 020 | 8 | 305-0163 | A | IC, 74LS163<br>U22 | RI | P | 1 | P | B | P | EA | 1 | 442 | 31-Aug-81 | | | |
| 013 | 8 | 305-0174 | A | IC, 74LS174<br>U30,U34,U38 | RI | P | 1 | P | B | P | EA | 3 | 442 | 31-Aug-81 | | | |
| 003 | 8 | 305-0240 | A | IC, 74LS240<br>U9 | RI | P | 1 | | B | P | EA | 1 | C127 | 31-Aug-81 | | | |
| 002 | 8 | 305-0244 | A | IC, 74LS244<br>U4,U5 | RI | P | 1 | P | B | P | EA | 2 | 442 | 31-Aug-81 | | | |
| 010 | 8 | 305-0257 | A | IC, 74LS257<br>U13,U20 | RI | P | 1 | P | B | P | EA | 2 | 442 | 31-Aug-81 | | | |
| 030 | 8 | 305-0280 | A | IC, 74LS280 9-BIT PARITY<br>U3 | RI | P | 1 | P | B | P | EA | 1 | 649 | 31-Aug-81 | | | |
| 015 | 8 | 305-0323 | A | IC, 74LS323<br>U14 | RI | P | 1 | P | B | P | EA | 1 | 442 | 31-Aug-81 | | | |
| 047 | 8 | 305-0377 | A | IC, 74LS377<br>U21 | RI | P | 1 | P | B | P | EA | 1 | 442 | 31-Aug-81 | | | |
| 024 | 8 | 307-0074 | A | IC, 74S74<br>U39 | RI | P | 1 | P | B | P | EA | 1 | C063 | 31-Aug-81 | | | |
| 011 | 8 | 307-0086 | A | IC, 74S86 | RI | P | 1 | P | B | P | EA | 1 | C063 | 31-Aug-81 | | | |

EFFECTIVITY DATE: ALL

INDENTED BILLS OF MATERIAL

PARENT PART: A9M0005 1 FG, PROFILE, 'GENERIC' DRIVE - USA UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
ERC: A SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION / REMARKS | FR CD | S L | T Y | S P | A B | P L | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | U28 | | | | | | | | | | | | | |
| 008 | 8 | 334-2114 | 1C | IC 1024X4 STATIC RAM 2114 TST&BRN | RL | P | 1 | P | C | P | EA | 2 | C621 | 31-Aug-81 | | | |
| | | | | U11,U18 | | | | | | | | | | | | | |
| 000 | 9 | 062-0083 | 1B | SPEC, 2114 RAM BURN-IN | EX | D | 7 | | * | U | EA | 0 | C314 | 15-Jul-83 | | | |
| 001 | 9 | 333-2114 | 1B | IC 1024 X 4 STATIC RAM 2114 | RL | P | 1 | | C | P | EA | 2 | C437 | 15-Jul-83 | | | |
| 073 | 8 | 335-0004 | A | PROM, 512 X 8 (UNPROGRAMMED) | RL | P | 1 | P | C | P | EA | 1 | C021 | 31-Aug-81 | | 12-Nov-81 | |
| 071 | 8 | 335-0006 | A | PROG OCT 16 INPT AND-OR-INVT GT A | RL | P | 1 | P | B | P | EA | 1 | 642 | 31-Aug-81 | | 12-Nov-81 | |
| 072 | 8 | 335-6309 | A | PROM, MMI 6309-1 | RL | P | 1 | P | C | P | EA | 1 | C-6 | 31-Aug-81 | | 12-Nov-81 | |
| 012 | 8 | 337-8253 | MA | PROGRAMMABLE INTERVAL TIMER | RL | P | 1 | P | A | P | EA | 1 | 642 | 31-Aug-81 | | | |
| | | | | U33 | | | | | | | | | | | | | |
| 004 | 8 | 337-8603 | B | IC SOCKET MICROPRO. W/24P PIGGYBA | RL | P | 1 | | * | P | EA | 1 | C148 | 31-Aug-81 | | 04-May-82 | |
| | | | | U25 | | | | | | | | | | | | | |
| 018 | 8 | 337-9401 | A | CRC GENERATOR/CHECKER | RL | P | 1 | P | A | P | EA | 1 | 642 | 31-Aug-81 | | | |
| | | | | U35 | | | | | | | | | | | | | |
| 021 | 8 | 341-0066 | A | PROM, U29 | RL | A | 1 | | * | P | EA | 1 | P105 | 13-Nov-81 | | | |
| | | | | (MMI 6309-1) | | | | | | | | | | | | | |
| 022 | 8 | 341-0067 | A | PROM, U37 | RL | A | 1 | | * | P | EA | 1 | P105 | 13-Nov-81 | | | |
| 007 | 8 | 341-0068 | A | RAMPAL | RL | P | 1 | | * | P | EA | 1 | P105 | 13-Nov-81 | | | |
| | | | | U27 (OCT 16 INPT | | | | | | | | | | | | | |
| | | | | AND-OR-INVT GT ARY) | | | | | | | | | | | | | |
| 031 | 8 | 341-0080 | B | PROG PROM 2K PROFILE CONTROLLER | RL | P | 1 | | * | P | EA | 1 | P184 | 13-Nov-81 | | 04-May-82 | |
| 074 | 8 | 341-0129 | A | EPROM-FIRMWARE 3.90 Z8 PROFILE-27 | RL | A | 1 | | * | P | EA | 1 | P110 | 31-Aug-81 | | 12-Nov-81 | |
| 001 | 9 | 335-2716 | A | EPROM, 2048 X 8 2716 | RL | P | 1 | P | C | P | EA | 1 | 642 | 31-Aug-81 | | | |
| 028 | 8 | 351-2074 | A | QUAD DARLINGTON XSTR ARRAY 2074B | RP | P | 1 | P | B | P | EA | 2 | 642 | 31-Aug-81 | | | |
| | | | | U7,U8 | | | | | | | | | | | | | |
| 023 | 8 | 359-4024 | A | VOLTAGE CONTROLLED MULTIVIBRATOR | RI | P | 1 | P | B | P | EA | 1 | 642 | 31-Aug-81 | | 14-Oct-83 | |
| | | | | U40 | | | | | | | | | | | | | |
| 033 | 8 | 371-4001 | 1A | DIODE RECTIFIER 1N4001 1.0A 50V | RP | P | 1 | P | C | P | EA | 8 | C599 | 31-Aug-81 | | | |
| | | | | CR1-CR8 | | | | | | | | | | | | | |
| 076 | 8 | 371-4128 | 1A | DIODE ZENER 1N4128 250mW 60V | RP | P | 1 | | * | P | EA | 4 | C538 | 31-Aug-81 | | 12-Nov-81 | |
| 064 | 8 | 371-4148 | A | DIODE FAST SWITCH 1N4148 200mA 75 | RP | P | 1 | P | C | P | EA | 4 | C538 | 13-Nov-81 | | | |
| | | | | CR9-CR12 | | | | | | | | | | | | | |
| 062 | 8 | 400-1406 | 1C | SCR 4-40X3/8 PN HD CRS REC STL ZN | EX | X | 7 | P | C | P | EA | 2 | C540 | 31-Aug-81 | | | |
| 055 | 8 | 511-1401 | C | SOCKET, IC 14 PIN | RP | P | 1 | P | C | P | EA | 3 | 799 | 07-Apr-83 | | | |
| 056 | 8 | 511-1601 | C | SOCKET, IC 16 PIN | RP | P | 1 | P | C | P | EA | 11 | 799 | 31-Aug-81 | | | |
| 057 | 8 | 511-1801 | C | SOCKET, IC 18 PIN | RP | P | 1 | P | C | P | EA | 2 | 799 | 31-Aug-81 | | | |
| 058 | 8 | 511-2001 | C | SOCKET, IC 20 PIN | RP | P | 1 | P | C | P | EA | 7 | 799 | 31-Aug-81 | | | |
| 059 | 8 | 511-2401 | C | SOCKET, IC 24 PIN | RP | P | 1 | P | C | P | EA | 1 | 799 | 31-Aug-81 | | | |
| 060 | 8 | 511-4001 | C | SOCKET, IC 40 PIN | RP | P | 1 | P | C | P | EA | 1 | 799 | 31-Aug-81 | | | |
| 061 | 8 | 515-0005 | 1B | CONN,PIN,SINGLE | RP | P | 1 | P | C | P | EA | 9 | C781 | 31-Aug-81 | | | |
| 054 | 8 | 515-0053 | 1C | CONN,HDR,STR,2P | RP | P | 1 | P | C | P | EA | 1 | C781 | 31-Aug-81 | | | |
| | | | | P7 | | | | | | | | | | | | | |
| 053 | 8 | 515-0082 | 1A | HEADER, 10 PIN RT ANGLE W/O EARS | RP | P | 1 | | C | P | EA | 1 | C480 | 31-Aug-81 | | 16-Nov-82 | |
| | | | | P5 | | | | | | | | | | | | | |
| 066 | 8 | 515-0150 | 1A | CONN,HDR,RT ANG,5P,.156 CTR,W/LKG | RP | P | 1 | | * | P | EA | 1 | C781 | 13-Nov-81 | | | |
| | | | | P3 | | | | | | | | | | | | | |
| 067 | 9 | 515-0160 | 1A | CONN,HDR,RT ANG,2P,W/LKG RAMP | RP | P | 1 | | * | P | EA | 1 | C781 | 13-Nov-81 | | | |
| | | | | P4 | | | | | | | | | | | | | |
| 065 | 8 | 519-0100 | 1B | CONN,PC TAIL,90 DEG,MET.LNG FTPRT | RP | P | 1 | | * | P | EA | 1 | C781 | 13-Nov-81 | | | |
| | | | | P1 | | | | | | | | | | | | | |

EFFECTIVITY DATE: ALL

I N D E N T E D B I L L S O F M A T E R I A L

PARENT PART: A9M0005 1 FG, PROFILE, 'GENERIC' DRIVE - USA UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
ERC: A SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | F K | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S P | A B | P L | UM | EXTENDED QTY PER | ECN CHG START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 049 | 8 | 520-0011 | 1A | CONN,PLUG,CONTACT KEY,'D' SUB<br>F1 | RP | P | 1 | | C | P | EA | 1 | C78131-Aug-81 | | | |
| 079 | 8 | 570-2239 | 1A | WIRE,STRANDED 22 AWG,GREEN,BULK | | * | * | | * | * | FT | 0.0420 | C50915-Oct-83 | | | |
| 068 | 8 | 571-0001 | A | WIRE, BUS BAR, 20 AWG, .5 IN. | EX | X | 7 | | * | U | FT | 1 | F23213-Nov-81 | | 14-Oct-83 | |
| 046 | 8 | 820-0055 | 1D | PCB, CONTROLLER, PROFILE | RF | P | 1 | | * | P | EA | 1 | F17631-Aug-81 | | | |
| 069 | 8 | 835-0150 | A | NUT/WASHER ASSY, (KEPS) 4-40 | EX | P | 7 | | * | P | EA | 2 | 834 13-Nov-81 | | | |
| 001 | 6 | 699-5009 | 1A | PURCHASED ASSY,DOMESTIC PWR SUPPL | | * | * | | * | * | EA | 1 | P66212-Dec-83 | | | |
| 005 | 6 | 825-0320 | A | LABEL, WARNING PWR SUP PROFILE | EX | P | 7 | | * | P | E | 1 | P10912-Dec-83 | | | |
| 002 | 6 | 860-0200 | 1C | STANDOFF, PLASTIC .188" | EX | P | 7 | | C | P | EA | 5 | C52012-Dec-83 | | | |
| 003 | 6 | 860-0213 | 1A | STANDOFF,6-32,5/16",METAL JACKNUT | | * | * | | * | * | EA | 1 | C32512-Dec-83 | | | |
| 002 | 5 | 656-5140 | 3B | INACT.MFG.SUBASSY,H.D.A.,PROFILE | | * | * | | * | * | EA | 1 | L30512-Dec-83 | | | |
| 005 | 6 | 400-1604 | 1C | SCR 6-32X1/4 PN HD CRS REC STL ZN | EX | X | 7 | | C | P | EA | 4 | C54014-Dec-82 | | | |
| 004 | 6 | 590-0048 | 1B | CABLE, ASSY, CNTRLR TO ANALOG PCB | RC | P | 1 | | * | P | EA | 1 | P60314-Dec-82 | | | |
| 001 | 7 | 513-0020 | 1B | CONN,CD EDG,IDC,17/34P,W/O EAR | RP | P | 1 | | * | U | EA | 1 | C78131-Aug-81 | | | |
| 002 | 7 | 517-0035 | 1B | CONN,SKT,INSUL. DISPL.,17/34P | RP | P | 1 | | C | U | EA | 1 | C78131-Aug-81 | | | |
| 003 | 7 | 569-0204 | 1B | CABLE, FLAT 34 CONDUCTOR | | * | * | | * | * | FT | 3.6200 | C52301-Oct-83 | | | |
| 004 | 7 | 590-0053 | 3A | REIDENTIFY SEE 569-0204 | RC | P | 1 | | * | P | FT | 3.6200 | C523 | | 30-Sep-83 | |
| 002 | 6 | 590-0105 | A | CABLE ASSY, #16 AWG GROUND WIRE | | P | * | | * | P | EA | 1 | P18014-Dec-82 | | | |
| 003 | 7 | 517-1102 | 1B | TERMINAL, RING TONGUE #8 | | P | * | | * | P | EA | 1 | C34401-Mar-82 | | | |
| 002 | 7 | 517-1211 | 1A | TERMINAL, RECEPT 4.75 X .51 TAB | | P | * | | * | P | EA | 1 | C62801-Mar-82 | | | |
| 001 | 7 | 570-1601 | A | WIRE, 16 AWG, GRAY, 26/30, 4.80" | | X | * | | * | P | EA | 1 | C05701-Mar-82 | | | |
| 003 | 6 | 656-4101 | A | ASSY, PCB TSTD, ANALOG | WT | A | 1 | | * | P | EA | 1 | P11114-Dec-82 | | | |
| 001 | 7 | 656-0101 | 1P | ASSY, PCB UNTSTD, ANALOG, PROFILE | WU | A | 1 | | * | P | EA | 1 | L05031-Aug-81 | | | |
| 000 | 8 | 050-5005 | 1J | SCHEMATIC, ANALOG BD, PROFILE | D | D | 7 | | * | U | EA | 0 | P69701-Mar-82 | | | |
| 050 | 8 | 101-4010 | 1A | RES 1 OHM 1/4W 5%<br>R101 | RP | P | 1 | S | C | P | EA | 1 | C67528-Jul-81 | | | |
| 051 | 8 | 101-4101 | 1A | RES 100 OHM 1/4W 5%<br>R4,67 | RP | P | 1 | P | C | P | EA | 2 | C67528-Jul-81 | | | |
| 053 | 8 | 101-4102 | 1A | RES 1K OHM 1/4W 5%<br>R2-3,R15,R20-21<br>R38-39,R48,R54,R59<br>R60-62,R85-88<br>R106,R108 | RP | P | 1 | P | C | P | EA | 19 | C67528-Jul-81 | | | |
| 068 | 8 | 101-4103 | 1A | RES 10K OHM 1/4W 5%<br>R13,17,42-45,47<br>R49,70,81,117 | RP | P | 1 | P | C | P | EA | 11 | C67528-Jul-81 | | | |
| 083 | 8 | 101-4104 | 1A | RES 100K OHM 1/4W 5%<br>R115 | RP | P | 1 | P | C | P | EA | 1 | C67528-Jul-81 | | | |
| 080 | 8 | 101-4111 | 1A | RES 110 OHM 1/4W 5%<br>R91,92 | RP | P | 1 | | C | P | EA | 2 | C67528-Jul-81 | | | |
| 064 | 8 | 101-4121 | 1A | RES 120 OHMS 1/4W 5%<br>R25,26 | RP | P | 1 | P | C | P | EA | 2 | C67528-Jul-81 | | | |
| 077 | 8 | 101-4122 | 1A | RES 1.2K OHM 1/4W 5%<br>R107 | RP | P | 1 | P | C | P | EA | 1 | C67528-Jul-81 | | | |
| 075 | 8 | 101-4123 | 1A | RES 12K OHM 1/4W 5%<br>R73 | RP | P | 1 | P | C | P | EA | 1 | C67528-Jul-81 | | | |
| 072 | 8 | 101-4151 | 1A | RES 150 OHM 1/4W 5%<br>R36,68,114 | RP | P | 1 | P | C | P | EA | 3 | C67528-Jul-81 | | | |
| 061 | 8 | 101-4152 | 1A | RES 1.5K OHM 1/4W 5%<br>R7,82,83 | RP | P | 1 | P | C | P | EA | 3 | C67528-Jul-81 | | | |

EFFECTIVITY DATE: ALL

I N D E N T E D B I L L S O F M A T E R I A L

PARENT PART: A9M0005 1 FG, PROFILE, 'GENERIC' DRIVE USA UM: EA PROD CODE: DH FCN: F354 ASSEMBLY QTY: 1
ERC: A SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | F R | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S P | A B | F L | UM | EXTENDED QTY PER | ECN CHG / START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 056 | 8 | 101-4182 | 1A | RES 1.8K OHM 1/4W 5%<br>R69 | RP | P | 1 | P | C | P | EA | 1 | C67528-Jul-81 | | | |
| 081 | 8 | 101-4201 | 1A | RES 200 OHM 1/4W 5%<br>R110 | RP | P | 1 | P | C | P | EA | 1 | C67528-Jul-81 | | | |
| 069 | 8 | 101-4203 | 1A | RES 20.0K OHM 1/4W 5%<br>R16,50 | RP | P | 1 | P | C | P | EA | 2 | C76028-Jul-81 | | | |
| 062 | 8 | 101-4220 | 1A | RES 22 OHM 1/4W 5%<br>R23,24,32 | RP | P | 1 | P | C | P | EA | 3 | C67528-Jul-81 | | | |
| 055 | 8 | 101-4241 | 1A | RES 240 OHM 1/4W 5%<br>R18,19 | RP | P | 1 | P | C | P | EA | 2 | C67528-Jul-81 | | | |
| 079 | 8 | 101-4242 | 1A | RES 2.4K OHM 1/4W 5%<br>R80,40,41 | RP | P | 1 | P | C | P | EA | 3 | C67528-Jul-81 | | | |
| 067 | 8 | 101-4243 | 1A | RES 24K OHM 1/4W 5%<br>R35 | RP | P | 1 | P | C | P | EA | 1 | C67528-Jul-81 | | | |
| 066 | 8 | 101-4244 | 1A | RES 240K OHM 1/4W 5%<br>R31 | RP | P | 1 | P | C | P | EA | 1 | C67528-Jul-81 | | | |
| 078 | 8 | 101-4272 | 1A | RES 2.7K OHM 1/4W 5%<br>R74 | RP | P | 1 | P | C | P | EA | 1 | C67528-Jul-81 | | | |
| 082 | 8 | 101-4301 | 1A | RES 300 OHM 1/4W 5%<br>R111 | RP | P | 1 | P | C | P | EA | 1 | C67528-Jul-81 | | | |
| 070 | 8 | 101-4331 | 1A | RES 330 OHM 1/4W 5%<br>R89,90 | RP | P | 1 | P | C | P | EA | 2 | C67528-Jul-81 | | | |
| 073 | 8 | 101-4332 | 1A | RES 3.3K OHM 1/4W 5%<br>R100,76 | RP | P | 1 | P | C | P | EA | 2 | C67528-Jul-81 | | | |
| 049 | 8 | 101-4390 | 1A | RES 39 OHM 1/4W 5%<br>R78,R112 | RP | P | 1 | P | C | P | EA | 2 | C67528-Jul-81 | | | |
| 054 | 8 | 101-4391 | 1A | RES 390 OHM 1/4W 5%<br>R55 | RP | P | 1 | P | C | P | EA | 1 | C67528-Jul-81 | | | |
| 060 | 8 | 101-4392 | 1A | RES 3.9K OHM 1/4W 5%<br>R9,8,113,1,27<br>R118,119 | RP | P | 1 | P | C | P | EA | 7 | C67513-Apr-83 | | | |
| 052 | 8 | 101-4471 | 1A | RES 470 OHM 1/4W 5%<br>R37,52-53,77 | RP | P | 1 | P | C | P | EA | 4 | C67528-Jul-81 | | | |
| 084 | 8 | 101-4473 | 1A | RES 47K OHM 1/4W 5%<br>R116,71 | RP | P | 1 | P | C | P | EA | 2 | C67528-Jul-81 | | | |
| 065 | 8 | 101-4511 | 1A | RES 510 OHM 1/4W 5%<br>R63,64,29,30,28 | RP | P | 1 | P | C | P | EA | 5 | C67528-Jul-81 | | | |
| 071 | 8 | 101-4561 | 1A | RES 560 OHM 1/4W 5%<br>R99 | RP | P | 1 | P | C | P | EA | 1 | C67528-Jul-81 | | | |
| 045 | 8 | 101-4681 | 1A | RES 680 OHMS 1/4W 5%<br>R11-12,R22 | RP | P | 1 | P | C | P | EA | 3 | C67528-Jul-81 | | | |
| 074 | 8 | 101-4751 | 1A | RES 750 OHM 1/4W 5%<br>R75,79 | RP | P | 1 | | C | P | EA | 2 | C67528-Jul-81 | | | |
| 063 | 8 | 101-4752 | 1A | RES 7.5K OHM 1/4W 5%<br>R5,6,33,34 | RP | P | 1 | P | C | P | EA | 4 | C67528-Jul-81 | | | |
| 076 | 8 | 101-4822 | 1A | RES 8.2K OHM 1/4W 5%<br>R7[illegible] | RP | P | 1 | P | C | P | EA | 1 | C67528-Jul-81 | | | |
| 057 | 8 | 101-4823 | 1A | RES 82K OHM 1/4W 5%<br>R46 | RP | P | 1 | | C | P | EA | 1 | C67528-Jul-81 | | | |
| 049 | 9 | [illegible]-154[illegible] | 1A | RES 1.54K OHM 1/4W 1% | RP | P | 1 | | C | P | EA | 1 | C75828-Jul-81 | | | |

EFFECTIVITY DATE: ALL

I N D E N T E D   B I L L S   O F   M A T E R I A L

PARENT PART: A9M0005   1   FG. PROFILE, 'GENERIC' DRIVE - USA   UM: EA   PROD CODE: DH   ECN: F354   ASSEMBLY QTY: 1
ERC: A   SRCE CODE: G   TYPE: 1   ABC: *   PLAN CODE: P   DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S F | A B | P L | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | R84 | | | | | | | | | | | | | |
| 042 | 8 | 108-1783 | 1A | RES 1.78K OHM 1/4W 1%<br>R10 | RP | P | 1 | | C | P | EA | 1 | C758 | 28-Jul-81 | | | |
| 041 | 8 | 108-1963 | 1A | RES 1.96K OHM 1/4W 1%<br>R105,104 | RP | P | 1 | | * | P | EA | 2 | C758 | 01-Mar-82 | | | |
| 047 | 8 | 108-3833 | 1A | RES 3.83K OHM 1/4W 1%<br>R93,R95-96,R97 | RP | P | 1 | | * | P | EA | 4 | C758 | 31-Jul-81 | | | |
| 039 | 8 | 108-3923 | 1A | RES 3.92K OHM 1/4W 1%<br>R65,66 | RP | P | 1 | P | C | P | EA | 2 | C758 | 28-Jul-81 | | | |
| 046 | 8 | 108-4531 | 1A | RES 45.3 OHM 1/4W 1%<br>R14 | RP | P | 1 | | C | P | EA | 1 | C758 | 28-Jul-81 | | | |
| 043 | 8 | 108-5623 | 1A | RES 5.62K OHM 1/4W 1%<br>R94,R98 | RP | P | 1 | | C | P | EA | 2 | C758 | 28-Jul-81 | | | |
| 106 | 8 | 109-0002 | 0 | POT, TRIM 1K OHM 20% | RP | P | 1 | P | C | P | EA | 1 | 442 | 10-Oct-83 | | | |
| 040 | 8 | 109-0005 | A | POT,TRIM 500 OHM,20%<br>ALTN P/N 109-0420 | RP | P | 1 | | * | P | EA | 1 | C045 | 18-May-82 | | 09-Oct-83 | |
| 098 | 8 | 109-0410 | 1A | POT, 500 OHM 18 - 25 TURNS | RP | P | 1 | | C | P | EA | 1 | C504 | 28-Jul-81 | | 02-Mar-82 | |
| 099 | 8 | 109-0420 | MA | POT, 1 TURN .250 DIA, 500 OHMS<br>ALTN P/N FOR ITEM 40 | RP | P | 1 | | C | P | EA | 0 | P105 | 18-May-82 | | 09-Oct-83 | |
| 038 | 8 | 111-0023 | 1A | RES NETWORK 7 X 560 OHM 5%<br>RP2-8 | RP | P | 1 | | C | P | EA | 7 | C675 | 28-Jul-81 | | | |
| 094 | 8 | 111-0024 | 1A | RES NETWORK 7 X 4.7K OHM 5%<br>RP-1 | RP | P | 1 | | C | P | EA | 1 | C675 | 28-Jul-81 | | | |
| 059 | 8 | 127-0100 | 1B | CAP TANT 4.7 uF 20% 10V<br>C59 | RP | P | 1 | | * | P | EA | 1 | C599 | 28-Jul-81 | | | |
| 037 | 8 | 127-0101 | 1B | CAP TANT 10 uF 20% 15/16V<br>C38-C40 | RP | P | 1 | | * | P | EA | 3 | C599 | 28-Jul-81 | | | |
| 029 | 8 | 130-0002 | 1B | CAP CER AXIAL .01 UF +80%-20% 25V<br>C1,2,6,7 | RP | P | 1 | P | C | P | EA | 4 | C939 | 28-Jul-81 | | | |
| 097 | 8 | 130-0003 | 1B | CAP CER AXIAL .1 UF +80%-20% 25V<br>C13,C14 | RP | P | 1 | P | C | P | EA | 2 | C939 | | | 14-Apr-83 | |
| 028 | 8 | 130-0007 | 1B | CAP CER AXIAL .1 UF +80%-20% 25V<br>C3-5,10-16,21,22,25,<br>C27,35-37,42-45,47<br>C48-51,53,55-57,63 | RP | P | 1 | | C | P | EA | 31 | C939 | 01-Mar-82 | | | |
| 031 | 8 | 130-0200 | 1A | CAP CER .001 uF 10% 25V<br>C24, C32 | RP | P | 1 | | C | P | EA | 2 | C599 | 28-Jul-81 | | | |
| 030 | 8 | 130-0201 | 1A | CAP CER .0022 uF 10% 25V<br>C19,23,28-31,26,62 | RP | P | 1 | | C | P | EA | 8 | C599 | 28-Jul-81 | | | |
| 036 | 8 | 137-5401 | 1A | CAP DIP MICA 20 pF 5% 500V<br>C61 | RP | P | 1 | | C | P | EA | 1 | C541 | 28-Jul-81 | | | |
| 035 | 8 | 137-5701 | 1A | CAP DIP MICA 47 pF 5% 500V<br>C34 | RP | P | 1 | P | C | P | EA | 1 | C541 | 28-Jul-81 | | | |
| 034 | 8 | 137-5801 | 1A | CAP DIP MICA 75 pF 5% 500V<br>C8 | RP | P | 1 | | C | P | EA | 1 | C541 | 28-Jul-81 | | | |
| 032 | 8 | 137-6101 | 1A | CAP DIP MICA 100 pF 5% 500V<br>C33 | RP | P | 1 | P | C | P | EA | 1 | C541 | 28-Jul-81 | | | |
| 033 | 8 | 137-6301 | 1A | CAP DIP MICA 150 pF 5% 500V<br>C7, C18, C17, C20 | RP | P | 1 | | C | P | EA | 4 | C541 | 28-Jul-81 | | | |
| [illegible] | 8 | 151-4701 | 1I | INDUCTOR, 5.6 uH 10% | RP | P | 1 | | * | P | EA | [illegible] | C395 | 28-Jul-81 | | | |

EFFECTIVITY DATE: ALL

INDENTED BILLS OF MATERIAL

PARENT PART: A9M0005    1 FG, PROFILE, 'GENERIC' DRIVE - USA    UM: EA    PROD CODE: DH    ECN: P354    ASSEMBLY QTY: 1
ERC: A    SRCE CODE: G    TYPE: 1    ABC: *    PLAN CODE: P    DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION / REMARKS | PR CD | SC | TY | SP | AB | PI | UM | EXTENDED QTY PER | ECN CHG / START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 021 | 8 | 156-0100 | A | DELAY LINE 14 PIN DIP 100 OHM, 50<br>L1, L2 | RP | P | 1 | | * | P | EA | 1 | 792 28-Jul-81 | | | |
| 022 | 8 | 156-0110 | A | DELAY LINE 14 PIN DIP 500 OHM 100<br>DLY 2 | RP | P | 1 | | * | P | EA | 1 | 792 28-Jul-81 | | | |
| 007 | 8 | 301-0045 | A | IC, 7445<br>DLY 1 | RI | P | 1 | | C | P | EA | 1 | C06328-Jul-81 | | | |
| 001 | 8 | 301-0074 | A | IC, 7474<br>U4 | RI | P | 1 | P | C | P | EA | 1 | C06328-Jul-81 | | | |
| 005 | 8 | 305-0014 | A | IC, 74LS14<br>U2 | RI | P | 1 | P | B | P | EA | 1 | 442 28-Jul-81 | | | |
| 002 | 8 | 305-0174 | A | IC, 74LS174<br>U30 | RI | P | 1 | P | B | P | EA | 1 | 442 28-Jul-81 | | | |
| 004 | 8 | 307-0064 | A | IC, 74S64<br>U29 | RI | P | 1 | | B | P | EA | 1 | C06328-Jul-81 | | | |
| 013 | 8 | 325-0102 | A | QUAD 2-INPUT NOR GATE<br>U27 | RI | P | 1 | | C | P | EA | 1 | 741 28-Jul-81 | | | |
| 010 | 8 | 325-0107 | A | TRIPLE 2-INPT EXCL OR/EXCL NOR GA<br>U18 | RI | P | 1 | | C | P | EA | 2 | 741 28-Jul-81 | | | |
| 008 | 8 | 325-0114 | A | TRIPLE LINE RECEIVER<br>U10, U15 | RI | P | 1 | | C | P | EA | 2 | 741 28-Jul-81 | | | |
| 009 | 8 | 325-0116 | A | TRIPLE LINE RECEIVER<br>U5, U14 | RI | P | 1 | | C | P | EA | 2 | 741 28-Jul-81 | | | |
| 012 | 8 | 325-0117 | A | DL-2-WID 2-3-INPT OR-AND/OR-AND-I<br>U26, U9 | RI | P | 1 | | C | P | EA | 1 | 741 28-Jul-81 | | | |
| 011 | 8 | 325-0131 | B | IC ECL HIGH SPEED DUAL D FLIP-FLO<br>U16 | RI | P | 1 | | C | P | EA | 6 | C25528-Jul-81 | | | |
| 006 | 8 | 327-0453 | A | IC, DUAL PERIPHERAL DRIVES<br>U11,17,19,20,21,22 | RI | P | 1 | | * | P | EA | 1 | 757 28-Jul-81 | | | |
| 096 | 8 | 335-0007 | A | PROG HEX 16 INPT REG AND-OR GT AR<br>U3 | RL | P | 1 | P | B | P | EA | 1 | 642 28-Jul-81 | | 02-Mar-82 | |
| 003 | 8 | 341-0069 | A | MFMPAL<br>PROG HEX 16 INPT<br>REG AND-OR GT ARY<br>U28 | RL | A | 1 | | * | P | EA | 1 | P10501-Mar-82 | | | |
| 014 | 8 | 351-2907 | A | IC TRANS ARRAY QUAD PNP GEN PURPO<br>U31, U23, U12 | RP | P | 1 | | C | P | EA | 3 | 750 28-Jul-81 | | | |
| 016 | 8 | 351-3127 | A | TRANSISTOR,ARRAY NPN HIGH FREQ.<br>U7 | RP | P | 1 | | C | P | EA | 1 | 750 28-Jul-81 | | | |
| 023 | 8 | 351-6700 | A | IC, TRANS. ARRAY QUAD COMP. PAIRS<br>U1, U24<br>ITEM 100-103 ALT P/N | RI | P | 1 | | C | P | EA | 2 | 750 28-Jul-81 | | | |
| 058 | 8 | 353-0005 | A | IC REG. +5V 100MA TO 92, 3 TERMNL<br>RG1 | RI | P | 1 | | C | P | EA | 1 | 792 28-Jul-81 | | | |
| 018 | 8 | 353-0319 | A | IC, HIGH SPEED DUAL COMPARATOR<br>U13 | RI | P | 1 | | C | P | EA | 1 | 750 28-Jul-81 | | | |
| 017 | 8 | 353-0353 | A | DUAL FET OP AMP/BUFFER<br>U25,U8 | RP | P | 1 | | C | P | EA | 2 | 750 28-Jul-81 | | | |
| 015 | 8 | 353-0592 | A | IC, VIDEO AMPLIFIER<br>U6 | RI | P | 1 | | C | P | EA | 1 | 750 28-Jul-81 | | | |
| 024 | 8 | 371-4152 | 1A | DIODE FAST SWITCH 1N41[illegible] 500mW 30 | RP | P | 1 | | [illegible] | P | EA | 23 | C53[illegible]28-Jul-81 | | | |

EFFECTIVITY DATE: ALL

I N D E N T E D   B I L L S   O F   M A T E R I A L

PARENT PART: A9M0005 1 FG, PROFILE, 'GENERIC' DRIVE - USA UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
ERC: A SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION / REMARKS | PR CD | S CY | T YP | S PB | A BL | P | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CR1-14, CR16-21, | | | | | | | | | | | | | |
| | | | | CR23-24, CR26 | | | | | | | | | | | | | |
| 100 | 8 | 372-2222 | 1A | TRANS,NPN,SWITCHING AND AMP 2N222 | | * | * | | * | * | EA | 0 | C403 | 08-Jul-83 | | | |
| | | | | ALT P/N FOR ITEM 23 | | | | | | | | | | | | | |
| | | | | U1-QTY 2 | | | | | | | | | | | | | |
| 101 | 8 | 372-2907 | A | XSTR,2N2907, PNP SWITCH & AMPLIFI | | * | * | | * | * | EA | 0 | C259 | 08-Jul-83 | | | |
| | | | | ALT P/N FOR ITEM 23 | | | | | | | | | | | | | |
| | | | | U1-QTY 2 | | | | | | | | | | | | | |
| 102 | 8 | 372-3904 | A | TRANSISTOR,NPN SW.&AMP. 2N3904 | RP | P | 1 | P | C | P | EA | 0 | C303 | 08-Jul-83 | | | |
| | | | | ALT P/N FOR ITEM 23 | | | | | | | | | | | | | |
| | | | | U24-QTY 2 | | | | | | | | | | | | | |
| 103 | 8 | 372-3906 | 1B | TRANSISTOR,PNP SW.&AMP. 2N3906 | RP | P | 1 | P | C | P | EA | 0 | C768 | 08-Jul-83 | | | |
| | | | | ALT P/N FOR ITEM 23 | | | | | | | | | | | | | |
| | | | | U24-QTY 2 | | | | | | | | | | | | | |
| 026 | 8 | 375-0010 | 1A | DIODE REFERENCE 10mA 1.2V | RP | P | 1 | | C | P | EA | 1 | C538 | 28-Jul-81 | | | |
| | | | | CR15 | | | | | | | | | | | | | |
| 019 | 8 | 375-0012 | 1A | DIODE DUAL VOLT VAR CAP 200mA 32V | RP | P | 1 | | * | P | EA | 1 | C538 | 28-Jul-81 | | | |
| | | | | Q2 | | | | | | | | | | | | | |
| 020 | 8 | 376-0016 | A | FET, N-CHANNEL VOLT CONTRL RESIS. | RP | P | 1 | | * | P | EA | 1 | C303 | 28-Jul-81 | | | |
| | | | | Q1 | | | | | | | | | | | | | |
| 090 | 8 | 511-0801 | C | SOCKET, IC 8 PIN | RP | P | 1 | P | C | P | EA | 3 | 799 | 28-Jul-81 | | 14-Apr-83 | |
| 091 | 8 | 511-1401 | C | SOCKET, IC 14 PIN | RP | P | 1 | P | C | P | EA | 12 | 799 | 28-Jul-81 | | 14-Apr-83 | |
| 092 | 8 | 511-1601 | C | SOCKET, IC 16 PIN | RP | P | 1 | P | C | P | EA | 17 | 799 | 28-Jul-81 | | 14-Apr-83 | |
| 093 | 8 | 511-2001 | C | SOCKET, IC 20 PIN | RP | P | 1 | P | C | P | EA | 1 | 799 | 28-Jul-81 | | 14-Apr-83 | |
| 089 | 8 | 515-0005 | 1B | CONN,PIN,SINGLE | RP | P | 1 | P | C | P | EA | 15 | C781 | 28-Jul-81 | | | |
| 087 | 8 | 515-0120 | 1A | CONN,HDR,SGL ROW,4P | RP | P | 1 | | * | P | EA | 1 | C781 | 28-Jul-81 | | 02-Mar-82 | |
| 085 | 8 | 515-0130 | 1B | CONN,HDR,RT ANG,DBL ROW,8/16P | RP | P | 1 | | * | P | EA | 1 | C781 | 28-Jul-81 | | | |
| | | | | J5 | | | | | | | | | | | | | |
| 088 | 8 | 515-0131 | 1B | CONN,HDR,RT ANG,DBL ROW,17/34P | RP | P | 1 | | C | P | EA | 1 | C781 | 01-Mar-82 | | 28-Aug-83 | |
| | | | | J2 | | | | | | | | | | | | | |
| 086 | 8 | 515-0140 | 1A | CONN,HDR,RT ANG,5P,W/LKG RAMP | RP | P | 1 | | * | P | EA | 3 | C781 | 28-Jul-81 | | | |
| | | | | J6-8 | | | | | | | | | | | | | |
| 105 | 8 | 515-0380 | 1A | CONN,HDR,RT ANG,DBL ROW,17/34P | | * | * | | * | * | EA | 1 | C781 | 29-Aug-83 | | | |
| | | | | J2 | | | | | | | | | | | | | |
| 104 | 8 | 550-0101 | 1C | TUBING, HEAT SHRINK 1/4 ID BLACK | EX | X | 7 | P | C | P | FT | 0 | C503 | 08-Jul-83 | | | |
| | | | | USE W/ALT P/N | | | | | | | | | | | | | |
| | | | | 100-101 ON U1 | | | | | | | | | | | | | |
| 095 | 8 | 820-0054 | AE | PCB, ANALOG PROFILE | RP | P | 1 | | * | P | EA | 1 | P214 | 01-Mar-82 | | | |
| 001 | 6 | 699-0054 | A | ASSY, O.E.M. HEAD DISC (H.D.A.) | VX | A | 1 | P | A | P | EA | 1 | 600 | 14-Dec-82 | | | |
| 005 | 4 | 699-5011 | 1B | PURCH ASSY,COATD TOP CVR,PRFLE-B | | * | * | | * | * | EA | 1 | L051 | 12-Dec-83 | | 05-Jan-84 | |
| 001 | 5 | 815-5007 | 1C | COVER, TOP, PROFILE | RM | P | 1 | | * | P | EA | 1 | P408 | 12-Dec-83 | | | |
| 006 | 4 | 810-0090 | 1A | DRESS PANEL, DRIVE, PROFILE | RM | P | 1 | | * | P | EA | 1 | P567 | 12-Dec-83 | | | |
| 007 | 4 | 810-0091 | 1B | DRESS PANEL, PWR SPLY PROFILE | RM | P | 1 | | * | P | EA | 1 | P644 | 12-Dec-83 | | | |
| 012 | 4 | 825-0207 | D | LABEL, FCC NON COMPLIANCE APPLE 3 | EX | X | 7 | P | C | P | EA | 1 | P593 | 12-Dec-83 | | 05-Jan-84 | |
| 014 | 4 | 835-0172 | 1A | NUT, U TYPE .017 THK | | * | * | | * | * | EA | 1 | C678 | 12-Dec-83 | | | |
| 009 | 5 | 430-1012 | 1C | SCR TAP 6-32X.312 PN CRS REC STL | | X | * | | * | P | EA | 4 | C540 | 23-May-83 | | | |
| 021 | 3 | 825-0113 | 1B | LABEL,CAUTION PROFILE/DUOFILE | EX | P | 7 | | * | P | EA | 1 | P441 | 15-Mar-83 | | | |
| 011 | 3 | 825-0114 | 1E | LABEL, PROFILE MODEL & SERIAL NO. | EX | P | 7 | | * | P | EA | 1 | P631 | 15-Mar-83 | | | |
| 008 | 3 | 825-0116 | C | LABEL, INDIVIDUAL CARTON PROFILE | EX | P | 7 | | * | P | EA | 1 | P234 | 15-Mar-83 | | | |
| [illegible] | 3 | 825-0207 | F | LABEL, FCC NON COMPLIANCE APPLE 3 | EX | X | 7 | P | C | P | EA | 1 | P594 | 15-Mar-83 | | 14-Sep-83 | |

EFFECTIVITY DATE: [illegible]

I N D E N T E D   B I L L   O F   M A T E R I A L

PARENT PART: A9M0005 1 FG, PROFILE, 'GENERIC' DRIVE - USA UM: EA PROD CODE: DH ECN: F354 ASSEMBLY QTY: 1
FRC: A SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E F | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S P | A B | P L | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 026 | 3 | 825-0311 | 1B | LABEL, LOGO 16MM BY 16MM | EX | X | 7 | P | C | P | EA | 1 | P514 | 15-Mar-83 | | | |
| 027 | 3 | 825-0313 | 1B | LABEL, NAMEPLATE, PROFILE | EX | P | 7 | | * | P | EA | 1 | P514 | 15-Mar-83 | | | |
| 028 | 3 | 825-0315 | 1C | LABEL, LED PROFILE | EX | P | 7 | | * | P | EA | 1 | P514 | 15-Mar-83 | | | |
| 010 | 3 | 825-0317 | A | LABEL, FRAGILE, PROFILE | EX | P | 7 | | * | P | EA | 4 | P112 | 01-Jun-83 | | | |
| 014 | 3 | 825-0328 | A | LABEL, DO NOT REMOVE END CAPS | EX | P | 7 | | * | P | EA | 2 | P125 | 15-Mar-83 | | | |
| 015 | 3 | 825-0329 | A | LABEL, SERIAL NUMBER | EX | P | 7 | | * | P | EA | 0.6000 | P124 | 15-Mar-83 | | | |
| 017 | 3 | 918-0050 | B | ANGLE BOARD, PALLETIZING, 2X2X36 | EX | X | 7 | S | C | U | EA | 0.3330 | M583 | 15-Mar-83 | | | |
| 018 | 3 | 918-0051 | B | SEALS, STRAPPING, 50 DY | EX | X | 7 | S | C | P | EA | 0.3330 | M583 | 15-Mar-83 | | | |
| 019 | 3 | 918-0052 | B | TAPE, STRAPPING, CONTRAX 816 | EX | X | 7 | S | A | P | EA | 0.0007 | M583 | 15-Mar-83 | | | |
| 020 | 3 | 918-0071 | B | PALLET, 48 X 40 2 WAY ENTRY | EX | P | 7 | | B | P | EA | 0.1670 | M725 | 15-Mar-83 | | | |
| 016 | 3 | 919-0010 | A | LABEL, MODEL TYPE 'US STD' RUBBER STAMP OR PEN | | * | * | | * | * | EA | 1.3330 | P330 | 15-Mar-83 | | | |
| 031 | 3 | 942-0115 | A | BAG, BUBBLE 8 X 6 | EX | X | 7 | | C | P | EA | 1 | P113 | 30-Jun-83 | | 30-Sep-83 | |
| 012 | 3 | 942-0117 | 1C | BOX, 29.5 X 21.25 X 16.13, PROFIL | EX | X | 7 | | C | P | EA | 1 | P399 | 15-Mar-83 | | 06-Jul-83 | |
| 022 | 3 | 942-0142 | A | BOX, OPF 19.25 X 10.75 X 6.88 | EX | P | 7 | | * | P | EA | 1 | P125 | 15-Mar-83 | | 06-Jul-83 | |
| 025 | 3 | 944-00[illegible]1 | 1A | CUSHION BLOCK, EPS, PROFILE (TO REPLACE ACC KIT) | | * | * | | * | * | EA | 1 | P354 | 15-Mar-83 | | 06-Jul-83 | |
| 009 | 3 | 946-0003 | B | TAPE, P.S. 2 inch X 60 yard ALT FOR ITEM 24 ALT QTY .0150 | EX | X | 7 | P | C | P | RL | 0 | C064 | 15-Mar-83 | | | |
| 024 | 3 | 946-0010 | A | TAPE,SEALING GLASS WEB #341 | EX | X | 7 | | B | P | RL | 0.0100 | 883 | 15-Mar-83 | | | |
| 023 | 3 | 946-0011 | A | TAPE,PRESSURE SENSITIVE 2 INCH,AU ALT FOR ITEM 24 ALT QTY .0009 | EX | X | 7 | | * | P | RL | 0 | C049 | 15-Mar-83 | | | |
| 007 | 3 | 946-0012 | 1C | STRAPPING, POLYPRO 1/2 INCH | EX | X | 7 | | * | P | RL | 0.0010 | P722 | 15-Mar-83 | | | |

EFFECTIVITY DATE: ALL

I N D E N T E D B I L L S O F M A T E R I A L

PARENT PART: A9M1005 FG, PROFILE 'GENERIC' DRIVE - EURO UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
ERC: A SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | F R | PART DESCRIPTION / REMARKS | PR CD S T S A P F I UM | EXTENDED QTY PER | ECN CHG / START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|
| 001 | 2 | 656-8204 | 1H | FG, PROFILE 'GENERIC' DRIVE-EURO | * * * * EA | 1 | L30515-Mar-83 | | | |
| 003 | 3 | 030-0183 | 1C | REGIS. CARD, PERIPH. & SOFTWARE | EX X 7 P C P EA | 1 | A92715-Mar-83 | | 11-Dec-83 | |
| 002 | 3 | 030-0273 | 1D | UNPACKING INSTRUCTIONS, PROFILE | EX X 7 C P EA | 1 | P72915-Mar-83 | | | |
| 001 | 3 | 030-0665 | 1C | PACK LIST, PROFILE DRIVE - EURO | * * * * EA | 1 | P67515-Mar-83 | | | |
| 005 | 3 | 600-2515 | A | ASSY, END PAD | WS A 1 * P EA | 2 | P12515-Mar-83 | | 06-Jul-83 | |
| 013 | 3 | 600-2516 | B | ASSY, END CAP, PROFILE | WS A 1 * P EA | 2 | P56815-Mar-83 | | 06-Jul-83 | |
| 006 | 3 | 600-2517 | A | ASSY., TOP/BOTTOM PAD, PROFILE | * * * * EA | 2 | P26515-Mar-83 | | 06-Jul-83 | |
| 030 | 3 | 602-0041 | 1B | ASSY, SHIPPING CTN - PROFILE FG'S | * * * * EA | 1 | L26707-Jul-83 | | | |
| 001 | 4 | 600-2515 | A | ASSY, END PAD | WS A 1 * P EA | 2 | P12507-Jul-83 | | | |
| 004 | 4 | 600-2516 | B | ASSY, END CAP, PROFILE | WS A 1 * P EA | 2 | P56807-Jul-83 | | | |
| 002 | 4 | 600-2517 | A | ASSY., TOP/BOTTOM PAD, PROFILE | * * * * EA | 2 | P26507-Jul-83 | | | |
| 003 | 4 | 942-0117 | 1C | BOX, 29.5 X 21.25 X 16.13, PROFIL | EX X 7 C P EA | 1 | P39907-Jul-83 | | | |
| 005 | 4 | 942-0142 | A | BOX, OPF 19.25 X 10.75 X 6.88 | EX P 7 * P EA | 1 | P12507-Jul-83 | | | |
| 007 | 4 | 944-0091 | 1A | CUSHION BLOCK, EPS, PROFILE<br>(TO REPLACE ACC KIT) | * * * * EA | 1 | P35407-Jul-83 | | | |
| 006 | 4 | 946-0010 | A | TAPE,SEALING GLASS WEB #341 | EX X 7 B P RL | 0.0100 | 883 07-Jul-83 | | | |
| 031 | 3 | 656-6110 | 3E | INACT.MFG.ASSY,CHASSIS,PROFILE | * * * * EA | 0 | L305 | | 11-Dec-83 | |
| 003 | 4 | 400-1604 | 1C | SCR 6-32X1/4 PN HD CRS REC STL ZN | EX X 7 C P EA | 0 | C54014-Dec-82 | | 30-Aug-83 | |
| 008 | 4 | 400-1606 | 1C | SCR 6-32X3/8 PN HD CRS REC STL ZN | EX X 1 P C P EA | 0 | C54001-Jun-83 | | 30-Aug-83 | |
| 004 | 4 | 400-1608 | 1C | SCR 6-32X1/2 PN HD CRS REC STL ZN | EX X 7 C P EA | 0 | C54014-Dec-82 | | 31-May-83 | |
| 013 | 4 | 403-1606 | 1C | SCR 6-32X3/8 PN CRS REC STL BL ZI | EX X 7 S C U EA | 0 | C54031-Aug-83 | | | |
| 009 | 4 | 430-1001 | 1C | SCR TAP 8-18X.437 PN CRS STL ZN | EX X 7 P C P EA | 0 | C54014-Dec-82 | | | |
| 011 | 4 | 590-0046 | 1B | CABLE, ASSY, I/O PROFILE | RC P 1 * P EA | 0 | P60314-Dec-82 | | 14-Apr-83 | |
| 001 | 5 | 519-0110 | 1A | CONN,'D',IDC,25P,W/O SR | RP P 1 * U EA | 0 | C78131-Aug-81 | | | |
| 002 | 5 | 569-0203 | 1B | CABLE, FLAT 25 CONDUCTOR | * * * * FT | 0 | C52301-Oct-83 | | | |
| 003 | 5 | 590-0052 | 3A | REIDENTIFY SEE 569-0203 | RC P 1 * P FT | 0 | C52331-Aug-81 | | 30-Sep-83 | |
| 010 | 4 | 656-4103 | A | ASSY, PCB TSTD, I/O PROFILE A3 | WT A 1 * P EA | 0 | P11314-Dec-82 | | 14-Apr-83 | |
| 001 | 5 | 656-0103 | 1F | ASSY, PCB UNTSTD, I/O PROFILE, A3 | WU A 1 * P EA | 0 | P78131-Aug-81 | | | |
| 000 | 6 | 050-5007 | 1B | SCHEMATIC, I/O CARD, PROFILE | D D 7 * U EA | 0 | P65104-Jan-82 | | | |
| 015 | 6 | 101-4103 | 1A | RES 10K OHM 1/4W 5%<br>R4,5,7 | RP P 1 P C P EA | 0 | C67531-Jul-81 | | | |
| 014 | 6 | 101-4332 | 1A | RES 3.3K OHM 1/4W 5%<br>R1,3,6 | RP P 1 P C P EA | 0 | C67531-Jul-81 | | | |
| 029 | 6 | 101-4751 | 1A | RES 750 OHM 1/4W 5%<br>R2 | RP P 1 C P EA | 0 | C67513-Nov-81 | | | |
| 034 | 6 | 112-0102 | 1B | RES ARRAY 8 X 47 OHM 10% | RP P 1 P C P EA | 0 | C67531-Aug-81 | | 12-Nov-81 | |
| 021 | 6 | 112-0104 | 1B | RES ARRAY 7 X 470 OHM 5%<br>B1 | RP P 1 * P EA | 0 | C67531-Jul-81 | | | |
| 013 | 6 | 112-0105 | 1B | RES ARRAY 8 X 330 OHM<br>A7,B7 | RP P 1 * P EA | 0 | C67513-Nov-81 | | 06-Nov-83 | |
| 036 | 6 | 112-0107 | 1B | RES ARRAY 8 X 100 OHM<br>A7,B7 | * * * * EA | 0 | C67507-Nov-83 | | | |
| 035 | 6 | 130-0003 | 1B | CAP CER AXIAL .1 UF +80%-20% 25V | RP P 1 P C P EA | 0 | C93913-Nov-81 | | 17-May-82 | |
| 016 | 6 | 130-0007 | 1B | CAP CER AXIAL .1 UF +80%-20% 25V<br>C1-C17 | RP P 1 C P EA | 0 | C93918-May-82 | | | |
| 032 | 6 | 132-6101 | 1A | CAP CER 100 pF 20% 50V<br>[illegible] | RP P 1 P C P EA | 0 | C54113-Nov-81 | | | |
| 031 | 6 | 159-0009 | A | BEAD, FERRITE<br>L1 | RP P 1 P C P EA | 0 | HC6213-Nov-81 | | | |
| 0[illegible]3 | 6 | 391-0030 | A | I[illegible] '4[illegible] | [illegible] | 0 | C96717-Nov-81 | | | |

PARENT PART: [illegible] PC, PROFILE "GENESIS" BRIDL LORD UM: EA PROD CODE: DH LCN: P35A ASSEMBLY QTY: 1
REL: A SELF CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | DESCRIPTION / REMARKS | CODES | EXTENDED QTY PER | ECO CHG / START DATE | CLOSE DATE |
|---|---|---|---|---|---|---|---|
| | | | B3 | | | | |
| 028 | 6 | 301-0259 | A IC, 74259 | RI P 1 P C P EA | 0 | C06331-Jul-81 | |
| | | | U12 | | | | |
| | | | SUB P/N FOR ITEM 7 | | | | |
| 007 | 6 | 301-9334 | A IC, 9334 | RI P 1 P C P EA | 0 | C06331-Jul-81 | |
| | | | C3 | | | | |
| | | | SUB P/N 301-0259 | | | | |
| | | | ITEM 28 | | | | |
| 004 | 6 | 305-0010 | A IC, 74LS10 | RI P 1 P P P EA | 0 | 442 31-Jul-81 | |
| | | | [illegible] | | | | |
| 002 | 6 | 305-0014 | A IC, 74LS14 | RI P 1 P B P EA | 0 | 442 31-Jul-81 | |
| | | | A2,B4 | | | | |
| 033 | 6 | 305-0038 | A IC, 74LS38 QUAD 2 INPUT BUFFER | RI P 1 P B P EA | 0 | 649 31-Aug-81 | 12-Nov-81 |
| 012 | 6 | 305-0109 | A IC, 74LS109 | RI P 1 P B P EA | 0 | 442 31-Jul-81 | |
| | | | B5 | | | | |
| 005 | 6 | 305-0125 | A IC, 74LS125 | RI P 1 P B P EA | 0 | 442 31-Jul-81 | |
| | | | C4 | | | | |
| 001 | 6 | 305-0132 | A IC, 74LS132 | RI P 1 P B P EA | 0 | 442 31-Jul-81 | |
| | | | A3 | | | | |
| 006 | 6 | 305-0138 | A IC, 74LS138 | RI P 1 P B P EA | 0 | 442 31-Jul-81 | |
| | | | C2 | | | | |
| 009 | 6 | 305-0244 | A IC, 74LS244 | RI P 1 P B P EA | 0 | 442 31-Jul-81 | |
| | | | A5 | | | | |
| 010 | 6 | 305-0280 | A IC, 74LS280 9-BIT PARITY | RI P 1 P B P EA | 0 | 649 31-Jul-81 | |
| | | | A4 | | | | |
| 011 | 6 | 305-0368 | A IC, 74LS368 | RI P 1 P B P EA | 0 | 442 31-Jul-81 | |
| | | | B6 | | | | |
| 008 | 6 | 305-0374 | A IC, 74LS374 | RI P 1 P B P EA | 0 | 442 31-Jul-81 | |
| | | | A6 | | | | |
| 026 | 6 | 400-1406 | 1C SCR 4-40X3/8 PN HD CRS REC STL ZN | EX X 7 P C P EA | 0 | C54031-Jul-81 | |
| 022 | 6 | 511-1401 | C SOCKET, IC 14 PIN | RP P 1 P C P EA | 0 | 799 31-Jul-81 | |
| 023 | 6 | 511-1601 | C SOCKET, IC 16 PIN | RP P 1 P C P EA | 0 | 799 31-Jul-81 | |
| 024 | 6 | 511-2001 | C SOCKET, IC 20 PIN | RP P 1 P C P EA | 0 | 799 31-Jul-81 | |
| 025 | 6 | 515-0005 | 1B CONN,PIN,SINGLE | RP P 1 P C P EA | 0 | C78131-Jul-81 | |
| | | | TP1,TP2 | | | | |
| 030 | 6 | 519-0100 | 1B CONN,PC TAIL,90 DEG,MET.LNC FTPRI | RP P 1 * P EA | 0 | C78113-Nov-81 | |
| | | | P1 | | | | |
| 018 | 6 | 520-0011 | 1A CONN,PLUG,CONTACT KEY,"D" SUB | RP P 1 C P EA | 0 | C78131-Jul-81 | |
| | | | P1 | | | | |
| 020 | 6 | 820-0056 | AC PCB I/O, PROFILE, FOR A3 | RM P 1 * P EA | 0 | P13531-Jul-81 | |
| 027 | 6 | 935-0150 | A NUT/WASHER ASSY, (KEPS) 4-40 | EX P 7 * P EA | 0 | 934 31-Jul-81 | |
| 002 | 4 | 656-5120 | 3D INACT.MFG SUBASSY,BASE,PROFILE | * * * * EA | 0 | L30514-Dec-82 | |
| 005 | 5 | 400-1604 | 1C SCR 6-32X1/4 PN HD CRS REC STL ZN | EX X 7 C P EA | 0 | C54014-Dec-82 | |
| 006 | 5 | 400-1606 | 1C SCR 6-32X3/8 PN HD CRS REC STL ZN | EX X 1 P C P EA | 0 | C54001-Apr-83 | 31-May-83 |
| 011 | [illegible] | 400-1608 | 1C SCR 6-32X1/2 PN HD CRS REC STL ZN | [illegible] C P EA | 0 | C54001-[illegible]-82 | |
| [illegible] | [illegible] | 4[illegible] | [illegible] | [illegible] | 0 | [illegible]-Dec-82 | 2[illegible]-Jun-8[illegible] |
| [illegible] | | [illegible] | [illegible] | * * * * EA | 0 | [illegible] | |
| [illegible]1 | | [illegible] | [illegible] SUBASSY,COVER,BOTTOM,PROFILE | * * * * EA | 0 | P[illegible]-Apr-8[illegible] | |
| [illegible] | | [illegible] | [illegible] PROFILE | * * * * EA | 0 | [illegible] | |
| [illegible] | | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | |

EFFECTIVITY DATE: [illegible]

PARENT PART: A9M1005 FG. PROFILE "GENERIC" DRIVE - FURO UM: EA PROD CODE: 08 ECN: F454 ASSEMBLY QTY: 1
[illegible] A SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar 83

| ITEM | LEVEL | COMPONENT PART NUMBER | E | PART DESCRIPTION / REMARKS | [illegible] UM | EXTENDED QTY PER | ECN NO / START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|
| 002 | 5 | 805-0088 | 1C | SUBPANEL, REAR, PROFILE | RP P 1 * P EA | 0 | P52614-Dec-82 | | | |
| 008 | 5 | 805-0104 | A | SUPPORT, PROFILE | RP P 1 * P EA | 0 | P14814-Dec-82 | | | |
| 010 | 5 | 810-0092 | B | COVER, DRIVE, BOTTOM, PROFILE | RM P 1 * P EA | 0 | P16814-Dec-82 | | 31-Mar-83 | |
| 003 | 5 | 810-0095 | 1A | COVER DRIVE, BOTTOM, PROFILE | * * * * EA | 0 | P40801-Apr-83 | | | |
| 009 | 5 | 815-5008 | 1C | COVER, BOTTOM, PROFILE | RM P 1 * P EA | 0 | P40814-Dec-82 | | 31-Mar-83 | |
| 004 | 5 | 865-0005 | MA | FOOT, .52HT, SQ | EX X 7 P C P EA | 0 | 545 14-Dec-82 | | | |
| 005 | 4 | 656-5130 | 3D | INACT.MFG SUBASSY, COVER, PROFILE | * * * * EA | 0 | L30514-Dec-82 | | | |
| 004 | 5 | 590-0047 | 1B | CABLE, ASSY, LED, PROFILE | RC P 1 * P EA | 0 | P46414-Dec-82 | | | |
| 008 | 6 | 517-0041 | 1A | CONN, RCPT, INSUL. DISPL., 2P | RP P 1 * U EA | 0 | C78131-Aug-81 | | | |
| 003 | 6 | 550-0010 | A | TUBING, BRAIDED, 1/8 DIA. | EX X 7 * U IN | 0 | P10931-Aug-81 | | | |
| 007 | 6 | 550-0101 | 1C | TUBING, HEAT SHRINK 1/4 ID BLACK | EX X 7 P C P FT | 0 | C50331-Aug-81 | | | |
| 006 | 6 | 550-0103 | 1C | TUBING, HEAT SHRINK 1/16 ID BLACK | EX X 7 P C P FT | 0 | C50331-Aug-81 | | | |
| 004 | 6 | 561-2600 | B | WIRE, BLACK 26 AWG, 7 X 34 | EX X 7 P * P FT | 0 | 764 31-Aug-81 | | | |
| 005 | 6 | 561-2622 | B | WIRE, 26 AWG STRAND. RED | EX X 7 * U FT | 0 | C01831-Aug-81 | | | |
| 001 | 6 | 710-0004 | MA | LED, RED APPLE III DISKCABLE | RP X 1 P C P EA | 0 | 552 31-Aug-81 | | | |
| 002 | 6 | 815-0190 | 0 | GROMET, PANEL MTG. FOR RECT. LAMP | RM X 1 P C P EA | 0 | 442 31-Aug-81 | | 26-Apr-83 | |
| 001 | 5 | 699-5011 | 1B | PURCH ASSY, COATD TOP CVR, PRFLE-B | * * * * EA | 0 | L05112-Dec-83 | | | |
| 001 | 6 | 815-5007 | 1C | COVER, TOP, PROFILE | RM P 1 * P EA | 0 | P40812-Dec-83 | | | |
| 008 | 5 | 815-0190 | 0 | GROMET, PANEL MTG. FOR RECT. LAMP | RM X 1 P C P EA | 0 | 442 27-Apr-83 | | | |
| 009 | 5 | 815-5007 | 1C | COVER, TOP, PROFILE | RM P 1 * P EA | 0 | P408 | | 11-Dec-83 | |
| 005 | 5 | 825-0311 | 1B | LABEL, LOGO 16MM BY 16MM | EX X 7 P C P EA | 0 | P51414-Dec-82 | | 15-Feb-83 | |
| 006 | 5 | 825-0313 | 1B | LABEL, NAMEPLATE, PROFILE | EX P 7 * P EA | 0 | P51414-Dec-82 | | 15-Feb-83 | |
| 007 | 5 | 825-0315 | 1C | LABEL, LED PROFILE | EX P 7 * P EA | 0 | P51414-Dec-82 | | 15-Feb-83 | |
| 003 | 5 | 830-0025 | 3A | INACTIVE, REIDENTIFIED SEE 830-002 | X * * P EA | 0 | C61114-Dec-82 | | | |
| 002 | 5 | 835-0005 | 1B | NUT, SPEED "J" TYPE SIZE 8 | EX X 7 P C P EA | 0 | C74414-Dec-82 | | | |
| 001 | 4 | 656-5150 | 3A | INACT.MFG SUBASY, HDA/PWR SUP, PROF | * * * * EA | 0 | L30514-Dec-82 | | | |
| 003 | 5 | 341-0171 | A | MICROPRCSR-2K PROG ROM FORR PROFI | * * * * EA | 0 | P26614-Dec-82 | | | |
| 001 | 5 | 656-5110 | 6C | MFG SUBASSY, POWER SUPPLY, PROFIL | * * * * EA | 0 | P55814-Dec-82 | | | |
| 007 | 6 | 400-1603 | 1C | SCR 6-32X3/16 PN HD CRS REC STL Z | EX P 7 * P EA | 0 | C54014-Dec-82 | | | |
| 006 | 6 | 656-4102 | MC | ASSY, PCB TSTD, CONTROLLER | WT A 1 * P EA | 0 | P26614-Dec-82 | | | |
| 002 | 7 | 337-8603 | B | IC SOCKET MICROPRO. W/24P PIGGYBA | RL P 1 * P EA | 0 | C14805-May-82 | | 14-Oct-82 | |
| | | | | U25 | | | | | | |
| 001 | 7 | 656-0102 | 1M | ASSY, PCB, UNTSTD, CONTROLLER, PROFIL | WH A 1 * P EA | 0 | P65131-Aug-81 | | | |
| 000 | 8 | 050-5006 | 1E | SCHEMATIC, CONTROLLER BD, PROFILE | D D 7 * U EA | 0 | P65104-Jan-82 | | | |
| 063 | 8 | 101-4101 | 1A | RES 100 OHM 1/4W 5% | RP P 1 P C P EA | 0 | C67531-Aug-81 | | | |
| | | | | R20, R21 | | | | | | |
| 038 | 8 | 101-4102 | 1A | RES 1K OHM 1/4W 5% | RP P 1 P C P EA | 0 | C67531-Aug-81 | | 14-Oct-83 | |
| | | | | R15 | | | | | | |
| 016 | 8 | 101-4103 | 1A | RES 10K OHM 1/4W 5% | RP P 1 P C P EA | 0 | C67531-Aug-81 | | | |
| | | | | R17 | | | | | | |
| 036 | 8 | 101-4152 | 1A | RES 1.5K OHM 1/4W 5% | RP P 1 P C P EA | 0 | C67531-Aug-81 | | | |
| | | | | R9, R10 | | | | | | |
| 040 | 8 | 101-4201 | 1A | RES 200 OHM 1/4W 5% | RP P 1 P C P EA | 0 | C67531-Aug-81 | | | |
| | | | | R17 | | | | | | |
| 042 | 8 | 101-4203 | 1A | RES 20K OHM 1/4W 5% | RP P 1 P C P EA | 0 | [illegible]25-Mar-83 | | | |
| | | | | R1, R3, R4, R5 | | | | | | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] 1/4W 5% | [illegible] | [illegible] | [illegible]-Aug-81 | | | |
| | | | | R2, R6, R7, R8, | | | | | | |
| | | | | [illegible] | | | | | | |
| | | [illegible] | [illegible] | [illegible] 1/4W [illegible] | [illegible] | | [illegible] | | [illegible] | |

EFFECTIVITY DATE: [illegible]

INDENTED BILL OF MATERIALS

PARENT PART: A9M1005 — FG- PROFILE "GENERIC" DRIVE - EURO — UM: EA — PROD CODE: DH — ECN: F354 — ASSEMBLY QTY: 1

FREE: A — SRCE CODE: G — TYPE: 1 — ABC: * — PLAN CODE: P — DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | F P | PART DESCRIPTION / REMARKS | PL U I S A P UM | EXTENDED QTY PER | ECN / START DATE | CLOSE DATE |
|---|---|---|---|---|---|---|---|---|
| | | | | R1,R2,R4,R5 | | | | |
| 039 | 8 | 101-4392 | 1A | RES 3.9K OHM 1/4W 5%<br>R14 | RP P 1 P C P EA | 0 | C67531-Aug-81 | 14-Oct-83 |
| 041 | 8 | 101-4510 | 1A | RES 51 OHM 1/4W 5%<br>R16 | RP P 1 P C P EA | 0 | C67531-Aug-81 | |
| 077 | 8 | 101-4512 | 1A | RES 5.1K OHM 1/4W 5%<br>R22 | RP P 1 P C P EA | 0 | C67525-Mar-83 | |
| 035 | 8 | 111-0021 | 1A | RES NETWORK 7 X 2K OHM 5%<br>RP1 | RP P 1 P C P EA | 0 | C67531-Aug-81 | |
| 034 | 8 | 111-0022 | 1A | RES NETWORK 7 X 10K OHM 5%<br>RP2 | RP P 1 P C P EA | 0 | C67531-Aug-81 | |
| 070 | 8 | 112-0102 | 1B | RES ARRAY 8 X 47 OHM 10% | RP P 1 P C P EA | 0 | C67531-Aug-81 | 12-Nov-81 |
| 001 | 8 | 112-0105 | 1B | RES ARRAY 8 X 330 OHM<br>U1,U2 | RP P 1 * P EA | 0 | C67513-Nov-81 | 06-Nov-83 |
| 081 | 8 | 112-0107 | 1B | RES ARRAY 8 X 100 OHM<br>U1,U2 | * * * * EA | 0 | C67507-Nov-83 | |
| 043 | 8 | 125-5701 | 1B | CAP ELECT 47 uF -10%+75% 10V<br>C8,C21,C29,C30 | RP P 1 C P EA | 0 | C77231-Aug-81 | |
| 045 | 8 | 130-0007 | 1B | CAP CER AXIAL .1 UF +80%-20% 25V | RP P 1 C P EA | 0 | C93907-Apr-83 | |
| 032 | 8 | 197-0017 | A | CRYSTAL, 10MHz | EX P 7 * P EA | 0 | 792 31-Aug-81 | 14-Oct-83 |
| 078 | 8 | 197-0502 | 1A | CLOCK OSC,CRYSTAL 10 MHz (TTL) | * * * * EA | 0 | C57615-Oct-83 | |
| 080 | 8 | 197-0504 | 1A | CLOCK OSCILLATOR,CRYSTAL,10 MHz<br>ALT FOR ITEM 78<br>ALT QTY 1 | * * * * EA | 0 | C58416-Oct-83 | |
| 029 | 8 | 301-0006 | A | IC, 7406<br>U41 | EX P 7 * P EA | 0 | C06331-Aug-81 | |
| 009 | 8 | 305-0000 | A | IC, 74LS00N<br>U15,U26 | RI P 1 P B P EA | 0 | 442 31-Aug-81 | |
| 026 | 8 | 305-0002 | A | IC, 74LS02N<br>U31 | RI P 1 P B P EA | 0 | 442 31-Aug-81 | |
| 025 | 8 | 305-0008 | A | IC, 74LS08<br>U32 | RI P 1 P B P EA | 0 | 442 31-Aug-81 | |
| 017 | 8 | 305-0014 | A | IC, 74LS14<br>U23 | RI P 1 P B P EA | 0 | 442 31-Aug-81 | |
| 027 | 8 | 305-0038 | A | IC, 74LS38 QUAD 2 INPUT BUFFER<br>U24 | RI P 1 P B P EA | 0 | 649 31-Aug-81 | |
| 019 | 8 | 305-0109 | A | IC, 74LS109<br>U36 | RI P 1 P B P EA | 0 | 442 31-Aug-81 | |
| 014 | 8 | 305-0153 | A | IC, 74LS153<br>U6 | RI P 1 P B P EA | 0 | 442 31-Aug-81 | |
| 006 | 8 | 305-0161 | A | IC, 74LS161<br>U10,U16,U17 | RI P 1 P B P EA | 0 | 442 31-Aug-81 | |
| 020 | 8 | 305-0163 | A | IC, 74LS163<br>U22 | RI P 1 P B P EA | 0 | 442 31-Aug-81 | |
| 017 | 8 | 305-0174 | A | IC, 74LS174<br>U30,U34,U38 | RI P 1 P B P EA | 0 | 442 31-Aug-81 | |
| [illegible] | [illegible] | [illegible]-0240 | A | IC, 74LS240<br>U9 | [illegible] | [illegible] | [illegible] Aug-81 | |
| [illegible] | [illegible] | [illegible]-0244 | A | IC, 74LS244<br>U3,U[illegible] | RI P 1 P B P EA | [illegible] | 442 31-Aug-81 | |

EFFECTIVITY DATE: ALL INDENTED BILLS OF MATERIAL

PARENT PART: A9M1005 FS, PROFILE "GENERIC" DRIVE EURO UM: EA PROD CODE: DB ECN: F354 ASSEMBLY QTY: 1
REV: A SPCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | PART DESCRIPTION / REMARKS | PR S T S A P CD [illegible] UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|
| 010 | 8 | 305-0257 | A IC, 74LS257 U13,U20 | RI P 1 P B P EA | 0 | 442 | 31-Aug-81 | | | |
| 030 | 8 | 305-0280 | A IC, 74LS280 9 BIT PARITY U3 | RI P 1 P B P EA | 0 | 649 | 31-Aug-81 | | | |
| 015 | 8 | 305-0323 | A IC, 74LS323 U14 | RI P 1 P B P EA | 0 | 442 | 31-Aug-81 | | | |
| 047 | 8 | 305-0377 | A IC, 74LS377 U21 | RI P 1 P B P EA | 0 | 442 | 31-Aug-81 | | | |
| 024 | 8 | 307-0074 | A IC, 74S74 U39 | RI P 1 P B P EA | 0 | C06331 | -Aug-81 | | | |
| 011 | 8 | 307-0086 | A IC, 74S86 U28 | RI P 1 P B P EA | 0 | C06331 | -Aug-81 | | | |
| 008 | 8 | 334-2114 | 1C IC 1024x4 STATIC RAM 2114 TST&BRN U11,U18 | RI P 1 P C P EA | 0 | C62131 | -Aug-81 | | | |
| 000 | 9 | 062-0083 | 1B SPEC, 2114 RAM BURN-IN | EX D 7 * U EA | 0 | C31415 | -Jul-83 | | | |
| 001 | 9 | 333-2114 | 1B IC 1024 X 4 STATIC RAM 2114 | RL P 1 C P EA | 0 | C43715 | -Jul-83 | | | |
| 073 | 8 | 335-0004 | A PROM, 512 X 8 (UNPROGRAMMED) | RL P 1 P C P EA | 0 | C02131 | -Aug-81 | | 12-Nov-81 | |
| 071 | 8 | 335-0006 | A PROG OCT 16 INPT AND-OR-INVT GT A | RL P 1 P B P EA | 0 | 642 | 31-Aug-81 | | 12-Nov-81 | |
| 072 | 8 | 335-6309 | A PROM, MMI 6309-1 | RL P 1 P C P EA | 0 | C-6 | 31-Aug-81 | | 12-Nov-81 | |
| 012 | 8 | 337-8253 | MA PROGRAMMABLE INTERVAL TIMER U33 | RL P 1 P A P EA | 0 | 642 | 31-Aug-81 | | | |
| 004 | 8 | 337-8603 | B IC SOCKET MICROPRO. W/24P PIGGYBA U25 | RL P 1 * P EA | 0 | C14831 | -Aug-81 | | 04-May-82 | |
| 018 | 8 | 337-9401 | A CRC GENERATOR/CHECKER U35 | RL P 1 P A P EA | 0 | 642 | 31-Aug-81 | | | |
| 021 | 8 | 341-0066 | A PROM, U29 (MMI 6309-1) | RL A 1 * P EA | 0 | P10513 | -Nov-81 | | | |
| 022 | 8 | 341-0067 | A PROM, U37 | RL A 1 * P EA | 0 | P10513 | -Nov-81 | | | |
| 007 | 8 | 341-0068 | A RAMPAL U27 (OCT 16 INPT AND-OR-INVT GT ARY) | RL P 1 * P EA | 0 | P10513 | -Nov-81 | | | |
| 031 | 8 | 341-0080 | B PROG PROM 2K PROFILE CONTROLLER | RL P 1 * P EA | 0 | P18413 | -Nov-81 | | 04-May-82 | |
| 074 | 8 | 341-0129 | A EPROM-FIRMWARE 3.90 Z8 PROFILE-27 | RL A 1 * P EA | 0 | P11031 | -Aug-81 | | 12-Nov-81 | |
| 001 | 9 | 335-2716 | A EPROM, 2048 X 8 2716 | RL P 1 P C P EA | 0 | 642 | 31-Aug-81 | | | |
| 028 | 8 | 351-2074 | A QUAD DARLINGTON XSTR ARRAY 2074B U7,U8 | RP P 1 P B P EA | 0 | 642 | 31-Aug-81 | | | |
| 023 | 8 | 359-4024 | A VOLTAGE CONTROLLED MULTIVIBRATOR U40 | RI P 1 P B P EA | 0 | 642 | 31-Aug-81 | | 14-Oct-83 | |
| 033 | 8 | 371-4001 | 1A DIODE RECTIFIER 1N4001 1.0A 50V CR1-CR8 | RP P 1 P C P EA | 0 | C59931 | -Aug-81 | | | |
| 076 | 8 | 371-4128 | 1A DIODE ZENER 1N4128 250mW 60V | RP P 1 * P EA | 0 | C53831 | -Aug-81 | | 12-Nov-81 | |
| 064 | 8 | 371-4148 | A DIODE FAST SWITCH 1N4148 200mA 75 CR9-CR12 | RP P 1 P C P EA | 0 | C53813 | -Nov-81 | | | |
| 062 | 8 | 400-1406 | 1C SCR 4-40X3/8 PN HD CRS REC STL ZN | EX X 7 P C P EA | 0 | C54031 | -Aug-81 | | | |
| 055 | 8 | 511-1401 | F SOCKET, IC 14 PIN | RP P 1 P C P EA | 0 | 799 | 07-Apr-82 | | | |
| 056 | 8 | 511-1601 | F SOCKET, IC 16 PIN | RP P 1 P C P EA | 0 | 799 | 31-Aug-81 | | | |
| [illegible] | [illegible] | 511-[illegible] | [illegible] SOCKET, IC 18 PIN | RP [illegible] | [illegible] | 799 | 31-Aug-81 | | | |
| 058 | 8 | 511-[illegible] | F SOCKET, IC 20 PIN | RP P 1 P [illegible] EA | 0 | 799 | 31-Aug-81 | | | |
| [illegible] | [illegible] | 511-[illegible] | [illegible] SOCKET, IC 24 PIN | RP [illegible] | [illegible] | 799 | 31-Aug-81 | | | |
| [illegible] | [illegible] | 511-[illegible] | [illegible] SOCKET, IC [illegible] PIN | RP [illegible] | [illegible] | [illegible] | [illegible]-Aug-81 | | | |

EFFECTIVITY DATE: [illegible] INDENTED BILLS OF MATERIAL

PARENT PART: 09M1005 FD. PROFILE "GENERIC" DRIVE FURO UM: EA PROD CODE: DR ECN: C354 ASSEMBLY QTY: 1
LEC: A SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | R | PART DESCRIPTION / REMARKS | PR CO | S C | T Y | S P | A B | P L | UM | EXTENDED QTY PER | ECN NO | START DATE | S/N | CLOSE DATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 061 | 8 | 515-0005 | 1B | CONN,PIN,SINGLE | RP | P | 1 | P | C | P | EA | 0 | C781 | 31-Aug-81 | | |
| 054 | 8 | 515-0053 | 1C | CONN,HDR,SIP,2P<br>P2 | RP | P | 1 | P | C | P | EA | 0 | C781 | 31-Aug-81 | | |
| 053 | 8 | 515-0083 | 1A | HEADER, 10 PIN RT ANGLE W/O EARS<br>P5 | RP | P | 1 | | C | P | EA | 0 | C480 | 31-Aug-81 | | 16-Nov-82 |
| 066 | 8 | 515-0150 | 1A | CONN,HDR,RT ANG,5P,.156 CTR,W/LKG<br>P3 | RP | P | 1 | | * | P | EA | 0 | C781 | 13-Nov-81 | | |
| 067 | 8 | 515-0160 | 1A | CONN,HDR,RT ANG,2P,W/LKG RAMP<br>P4 | RP | P | 1 | | * | P | EA | 0 | C781 | 13-Nov-81 | | |
| 065 | 8 | 519-0100 | 1B | CONN,PC TAIL,90 DEG,MET.LNG FTPRI<br>P1 | RP | P | 1 | | * | P | FA | 0 | C781 | 13-Nov-81 | | |
| 049 | 8 | 520-0011 | 1A | CONN,PLUG,CONTACT KEY,"D" SUB<br>P1 | RP | P | 1 | | C | P | EA | 0 | C781 | 31-Aug-81 | | |
| 079 | 8 | 570-2239 | 1A | WIRE,STRANDED 22 AWG,GREEN,BULK | | * | * | | * | * | FT | 0 | C509 | 15-Oct-83 | | |
| 068 | 8 | 571-0001 | A | WIRE, BUS BAR, 20 AWG, .5 IN. | EX | X | 7 | | * | U | FT | 0 | P232 | 13-Nov-81 | | 14-Oct-83 |
| 046 | 8 | 820-0055 | 1D | PCB. CONTROLLER, PROFILE | RP | P | 1 | | * | P | EA | 0 | P176 | 31-Aug-81 | | |
| 069 | 8 | 835-0150 | A | NUT/WASHER ASSY, (KEPS) 4-40 | EX | P | 7 | | * | P | EA | 0 | 834 | 13-Nov-81 | | |
| 001 | 6 | 699-0059 | AB | PURCH. ASSY, POWER SUPPLY PROFILE | VX | P | 1 | | A | P | EA | 0 | P181 | 14-Dec-82 | | |
| 005 | 6 | 825-0320 | A | LABEL, WARNING PWR SUP PROFILE | EX | P | 7 | | * | P | E | 0 | P109 | 14-Dec-82 | | |
| 002 | 6 | 860-0200 | 1C | STANDOFF, PLASTIC .188" | EX | P | 7 | | C | P | EA | 0 | C520 | 14-Dec-82 | | |
| 011 | 6 | 860-0210 | MA | STANDOFF, HEX 6-32 X 1/4 | EX | P | 7 | | * | P | EA | 0 | P109 | | | 06-Apr-83 |
| 003 | 6 | 860-0213 | 1A | STANDOFF,6-32,5/16",METAL JACKNUT | | * | * | | * | * | EA | 0 | C325 | 30-Mar-83 | | |
| 008 | 6 | 918-0023 | 0 | 1/4" TAN DOT<br>ALTN P/N FOR ITEM 4<br>ALTN QTY 1 | EX | X | 7 | S | C | U | EA | 0 | | 14-Dec-82 | | 16-Aug-83 |
| 004 | 6 | 918-0025 | 0 | 1/4" RED DOT<br>ALTN P/N 918-0023<br>ALTN P/N 918-0029<br>ALTN P/N 918-0031 | EX | X | 7 | S | C | U | BX | 0 | | 14-Dec-82 | | 16-Aug-83 |
| 009 | 6 | 918-0029 | 0 | 1/4" ORANGE DOT<br>ALTN P/N FOR ITEM 4<br>ALTN QTY 1 | EX | X | 7 | S | C | U | EA | 0 | | 14-Dec-82 | | 16-Aug-83 |
| 010 | 6 | 918-0031 | 0 | 1/4" WHITE DOT<br>ALTN P/N FOR ITEM 4<br>ALTN QTY 1 | EX | X | 7 | S | C | U | EA | 0 | | 14-Dec-82 | | 16-Aug-83 |
| 002 | 5 | 656-5140 | 3B | INACT.MFG.SUBASSY,H.D.A.,PROFILE | | * | * | | * | * | EA | 0 | L305 | 14-Dec-82 | | |
| 005 | 6 | 400-1604 | 1C | SCR 6-32X1/4 PN HD CRS REC STL ZN | EX | X | 7 | | C | P | EA | 0 | C540 | 14-Dec-82 | | |
| 004 | 6 | 590-0048 | 1B | CABLE, ASSY, CNTRLR TO ANALOG PCB | RC | P | 1 | | * | P | EA | 0 | P603 | 14-Dec-82 | | |
| 001 | 7 | 513-0020 | 1B | CONN,CD EDG,IDC,17/34P,W/O EAR | RP | P | 1 | | * | U | FA | 0 | C781 | 31-Aug-81 | | |
| 002 | 7 | 517-0035 | 1P | CONN,SKT,INSUL. DISPL.,17/34P | RP | P | 1 | | C | U | EA | 0 | C781 | 31-Aug-81 | | |
| 003 | 7 | 569-0204 | 1B | CABLE, FLAT 34 CONDUCTOR | | * | * | | * | * | FT | 0 | C523 | 01-Oct-83 | | |
| 004 | 7 | 590-0053 | 3A | REIDENTIFY SEE 569-0204 | RC | P | 1 | | * | P | FT | 0 | C523 | | | 30-Sep-83 |
| 002 | 6 | 590-0105 | A | CABLE ASSY, #16 AWG GROUND WIRE | | P | * | | * | P | EA | 0 | P180 | 14-Dec-82 | | |
| 003 | 7 | 517-1102 | 1B | TERMINAL, RING TONGUE #8 | | P | * | | * | P | EA | 0 | C344 | 01-Mar-82 | | |
| 002 | 7 | 517-1211 | 1A | TERMINAL, RECEPT 4.75 X .51 TAB | | P | * | | * | P | FA | 0 | C629 | 01-Mar-82 | | |
| 001 | 7 | 570-1601 | A | WIRE, 16 AWG, GRA:, 26/30, 4.80" | | [illegible] | * | | * | P | EA | 0 | [illegible] | 01-Mar-82 | | |
| [illegible] | [illegible] | 656-4101 | A | ASSY, PCB [illegible], ANALOG | WI | A | 1 | | * | P | EA | 0 | P111 | 14-Dec-82 | | |
| 001 | 7 | 656-0101 | 1F | ASSY, PCB UNTSTD, ANALOG, PROFILE | WI | A | 1 | | * | P | EA | 0 | L050 | 31-Aug-81 | | |
| [illegible] | [illegible] | 051-1005 | [illegible] | SCHEMATIC, ANALOG BD, PROFILE | D | P | [illegible] | | * | U | EA | 0 | [illegible] | 01-Mar-82 | | |
| [illegible] | [illegible] | [illegible]-4016 | 1A | RES 1 OHM 1 4W 5% | RP | [illegible] | [illegible] | [illegible] | C | [illegible] | [illegible] | [illegible] | [illegible] | [illegible]-Jul-81 | | |

EFFECTIVITY DATE: AL[illegible]

# I N D E N T E D B I L L S O F M A T E R I A L

PARENT PART: A9M1005 FG, PROFILE 'GENERIC' DRIVE - EURO UM: EA PROD CODE: DH ECN: F354 ASSEMBLY QTY: 1
ERC: A SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION / REMARKS | PR CD S C T Y F P A B P I UM | EXTENDED QTY PER | ECN CHG START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | R101 | | | | | | |
| 051 | 8 | 101-4101 | 1A | RES 100 OHM 1/4W 5%<br>R4,67 | RP P 1 P C P EA | 0 | C67528-Jul-81 | | | |
| 053 | 8 | 101-4102 | 1A | RES 1K OHM 1/4W 5%<br>R2-3,R15,R20-21<br>R38-39,R48,R54,R59<br>R60-62,R85-88<br>R106,R108 | RP P 1 P C P EA | 0 | C67528-Jul-81 | | | |
| 068 | 8 | 101-4103 | 1A | RES 10K OHM 1/4W 5%<br>R13,17,42-45,47<br>R49,70,81,117 | RP P 1 P C P EA | 0 | C67528-Jul-81 | | | |
| 083 | 8 | 101-4104 | 1A | RES 100K OHM 1/4W 5%<br>R115 | RP P 1 P C P EA | 0 | C67528-Jul-81 | | | |
| 080 | 8 | 101-4111 | 1A | RES 110 OHM 1/4W 5%<br>R91,92 | RP P 1 C P EA | 0 | C67528-Jul-81 | | | |
| 064 | 8 | 101-4121 | 1A | RES 120 OHMS 1/4W 5%<br>R25,26 | RP P 1 P C P EA | 0 | C67528-Jul-81 | | | |
| 077 | 8 | 101-4122 | 1A | RES 1.2K OHM 1/4W 5%<br>R107 | RP P 1 P C P EA | 0 | C67528-Jul-81 | | | |
| 075 | 8 | 101-4123 | 1A | RES 12K OHM 1/4W 5%<br>R73 | RP P 1 P C P EA | 0 | C67528-Jul-81 | | | |
| 072 | 8 | 101-4151 | 1A | RES 150 OHM 1/4W 5%<br>R36,68,114 | RP P 1 P C P EA | 0 | C67528-Jul-81 | | | |
| 061 | 8 | 101-4152 | 1A | RES 1.5K OHM 1/4W 5%<br>R7,82,83 | RP P 1 P C P EA | 0 | C67528-Jul-81 | | | |
| 056 | 8 | 101-4182 | 1A | RES 1.8K OHM 1/4W 5%<br>R69 | RP P 1 P C P EA | 0 | C67528-Jul-81 | | | |
| 081 | 8 | 101-4201 | 1A | RES 200 OHM 1/4W 5%<br>R110 | RP P 1 P C P EA | 0 | C67528-Jul-81 | | | |
| 069 | 8 | 101-4203 | 1A | RES 20.0K OHM 1/4W 5%<br>R16,50 | RP P 1 P C P EA | 0 | C76028-Jul-81 | | | |
| 062 | 8 | 101-4220 | 1A | RES 22 OHM 1/4W 5%<br>R23,24,32 | RP P 1 P C P EA | 0 | C67528-Jul-81 | | | |
| 055 | 8 | 101-4241 | 1A | RES 240 OHM 1/4W 5%<br>R18,19 | RP P 1 P C P EA | 0 | C67528-Jul-81 | | | |
| 079 | 8 | 101-4242 | 1A | RES 2.4K OHM 1/4W 5%<br>R80,40,41 | RP P 1 P C P EA | 0 | C67528-Jul-81 | | | |
| 067 | 8 | 101-4243 | 1A | RES 24K OHM 1/4W 5%<br>R35 | RP P 1 P C P EA | 0 | C67528-Jul-81 | | | |
| 066 | 8 | 101-4244 | 1A | RES 240K OHM 1/4W 5%<br>R31 | RP P 1 P C P EA | 0 | C67528-Jul-81 | | | |
| 078 | 8 | 101-4272 | 1A | RES 2.7K OHM 1/4W 5%<br>R74 | RP P 1 P C P EA | 0 | C67528-Jul-81 | | | |
| 082 | 8 | 101-4301 | 1A | RES 300 OHM 1/4W 5%<br>R111 | RP P 1 P C P EA | 0 | C67528-Jul-81 | | | |
| 070 | 8 | 101-4331 | 1A | RES 330 OHM 1/4W 5%<br>R89,90 | RP P 1 P C P EA | 0 | C67528-Jul-81 | | | |
| [illegible]3 | 8 | 101-4332 | 1A | RES 3.3K OHM 1/4W 5%<br>R100,76 | RP P 1 P C P EA | 0 | C67528-Jul-81 | | | |
| 049 | 8 | 101-4390 | 1A | RES 39 OHM 1/4W 5% | RP P 1 P C P EA | 0 | [illegible]-Jul-81 | | | |

EFFECTIVITY DATE: ALL    I N D E N T E D   B I L L S   O F   M A T E R I A L

PARENT PART: A9M1005    FG, PROFILE 'GENERIC' DRIVE - EURO    UM: EA    PROD CODE: DH    ECN: F354    ASSEMBLY QTY: 1
ERC: A    SRCE CODE: G    TYPE: 1    ABC: *    PLAN CODE: P    DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E P | PART DESCRIPTION / REMARKS | PR CD | C | TY | SP | AB | PI | UM | EXTENDED QTY PER | ECN CHG / START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | R78,R112 | | | | | | | | | | | | |
| 054 | 8 | 101-4391 | 1A | RES 390 OHM 1/4W 5% | RP | P | 1 | P | C | P | EA | 0 | C67528-Jul-81 | | | |
| | | | | R5? | | | | | | | | | | | | |
| 060 | 8 | 101-4392 | 1A | RES 3.9K OHM 1/4W 5% | RP | P | 1 | P | C | P | EA | 0 | C67513-Apr-83 | | | |
| | | | | R9,8,113,1,27 | | | | | | | | | | | | |
| | | | | R118,119 | | | | | | | | | | | | |
| 052 | 8 | 101-4471 | 1A | RES 470 OHM 1/4W 5% | RP | P | 1 | P | C | P | EA | 0 | C67528-Jul-81 | | | |
| | | | | R37,52-53,77 | | | | | | | | | | | | |
| 084 | 8 | 101-4473 | 1A | RES 47K OHM 1/4W 5% | RP | P | 1 | P | C | P | EA | 0 | C67528-Jul-81 | | | |
| | | | | R116,71 | | | | | | | | | | | | |
| 065 | 8 | 101-4511 | 1A | RES 510 OHM 1/4W 5% | RP | P | 1 | P | C | P | EA | 0 | C67528-Jul-81 | | | |
| | | | | R63,64,29,30,28 | | | | | | | | | | | | |
| 071 | 8 | 101-4561 | 1A | RES 560 OHM 1/4W 5% | RP | P | 1 | P | C | P | EA | 0 | C67528-Jul-81 | | | |
| | | | | R99 | | | | | | | | | | | | |
| 045 | 8 | 101-4681 | 1A | RES 680 OHMS 1/4W 5% | RP | P | 1 | P | C | P | EA | 0 | C67528-Jul-81 | | | |
| | | | | R11-12,R22 | | | | | | | | | | | | |
| 074 | 8 | 101-4751 | 1A | RES 750 OHM 1/4W 5% | RP | P | 1 | | C | P | EA | 0 | C67528-Jul-81 | | | |
| | | | | R75,79 | | | | | | | | | | | | |
| 063 | 8 | 101-4752 | 1A | RES 7.5K OHM 1/4W 5% | RP | P | 1 | P | C | P | EA | 0 | C67528-Jul-81 | | | |
| | | | | R5,6,33,34 | | | | | | | | | | | | |
| 076 | 8 | 101-4822 | 1A | RES 8.2K OHM 1/4W 5% | RP | P | 1 | P | C | P | EA | 0 | C67528-Jul-81 | | | |
| | | | | R72 | | | | | | | | | | | | |
| 057 | 8 | 101-4823 | 1A | RES 82K OHM 1/4W 5% | RP | P | 1 | | C | P | EA | 0 | C67528-Jul-81 | | | |
| | | | | R46 | | | | | | | | | | | | |
| 048 | 8 | 108-1543 | 1A | RES 1.54K OHM 1/4W 1% | RP | P | 1 | | C | P | EA | 0 | C75828-Jul-81 | | | |
| | | | | R84 | | | | | | | | | | | | |
| 042 | 8 | 108-1783 | 1A | RES 1.78K OHM 1/4W 1% | RP | P | 1 | | C | P | EA | 0 | C75828-Jul-81 | | | |
| | | | | R10 | | | | | | | | | | | | |
| 041 | 8 | 108-1963 | 1A | RES 1.96K OHM 1/4W 1% | RP | P | 1 | | * | P | EA | 0 | C75801-Mar-82 | | | |
| | | | | R105,104 | | | | | | | | | | | | |
| 047 | 8 | 108-3833 | 1A | RES 3.83K OHM 1/4W 1% | RP | P | 1 | | * | P | EA | 0 | C75831-Jul-81 | | | |
| | | | | R93,R95-96,R97 | | | | | | | | | | | | |
| 039 | 8 | 108-3923 | 1A | RES 3.92K OHM 1/4W 1% | RP | P | 1 | P | C | P | EA | 0 | C75828-Jul-81 | | | |
| | | | | R65,66 | | | | | | | | | | | | |
| 046 | 8 | 108-4531 | 1A | RES 45.3 OHM 1/4W 1% | RP | P | 1 | | C | P | EA | 0 | C75828-Jul-81 | | | |
| | | | | R14 | | | | | | | | | | | | |
| 043 | 8 | 108-5623 | 1A | RES 5.62K OHM 1/4W 1% | RP | P | 1 | | C | P | EA | 0 | C75828-Jul-81 | | | |
| | | | | R94,R98 | | | | | | | | | | | | |
| 106 | 8 | 109-0002 | 0 | POT, TRIM 1K OHM 20% | RP | P | 1 | P | C | P | EA | 0 | 442 10-Oct-83 | | | |
| 040 | 8 | 109-0005 | A | POT,TRIM 500 OHM,20% | RP | P | 1 | | * | P | EA | 0 | C04518-May-82 | | 09-Oct-83 | |
| | | | | ALTN P/N 109-0420 | | | | | | | | | | | | |
| 098 | 8 | 109-0410 | 1A | POT, 500 OHM 18 - 25 TURNS | RF | P | 1 | | C | P | EA | 0 | C50428-Jul-81 | | 02-Mar-82 | |
| 099 | 8 | 109-0420 | MA | POT, 1 TURN .250 DIA, 500 OHMS | RP | P | 1 | | C | P | EA | 0 | P10518-May-82 | | 09-Oct-83 | |
| | | | | ALTN P/N FOR ITEM 40 | | | | | | | | | | | | |
| 033 | 8 | 111-0023 | 1A | RES NETWORK 7 X 560 OHM 5% | RP | P | 1 | | C | P | EA | 0 | C67528-Jul-81 | | | |
| | | | | RP2-8 | | | | | | | | | | | | |
| 0?4 | 8 | 111-0024 | 1A | RES NETWORK 7 X 4.7K OHM 5% | RP | P | 1 | | C | P | EA | | C67528-Jul-81 | | | |
| | | | | RP-1 | | | | | | | | | | | | |
| 05? | 8 | 1??-0106 | 1E | CAP TANT 4.7 uF 20% 10V | RP | P | 1 | | * | P | EA | 0 | C59928-Jul-81 | | | |
| | | | | C?? | | | | | | | | | | | | |

EFFECTIVITY DATE: ALL

INDENTED BILLS OF MATERIAL

PARENT PART: A9M1005 FG, PROFILE 'GENERIC' DRIVE - EURO UM: EA PROD CODE: DH ECN: F354 ASSEMBLY QTY: 1
ERC: A SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: F DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | F PART DESCRIPTION / REMARKS | PR S T S A P / CD C T P B UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|
| 037 | 8 | 127-0101 | 1B CAP TANT 10 uF 20% 15/16V<br>C38-C40 | RP P 1 * P EA | 0 | C599 | 28-Jul-81 | | | |
| 029 | 8 | 130-0002 | 1B CAP CER AXIAL .01 UF +80%-20% 25V<br>C1,2,6,7 | RP P 1 P C P EA | 0 | C939 | 28-Jul-81 | | | |
| 097 | 8 | 130-0003 | 1B CAP CER AXIAL .1 UF +80%-20% 25V<br>C13,C14 | RP P 1 P C P EA | 0 | C939 | | | 14-Apr-83 | |
| 028 | 8 | 130-0007 | 1B CAP CER AXIAL .1 UF +80%-20% 25V<br>C3-5,10-16,21,22,25,<br>C27,35-37,42-45,47<br>C48-51,53,55-57,63 | RP P 1 C P EA | 0 | C939 | 01-Mar-82 | | | |
| 031 | 8 | 130-0200 | 1A CAP CER .001 uF 10% 25V<br>C24, C32 | RP P 1 C P EA | 0 | C599 | 28-Jul-81 | | | |
| 030 | 8 | 130-0201 | 1A CAP CER .0022 uF 10% 25V<br>C19,23,28-31,26,62 | RP P 1 C P EA | 0 | C599 | 28-Jul-81 | | | |
| 036 | 8 | 137-5401 | 1A CAP DIP MICA 20 pF 5% 500V<br>C61 | RP P 1 C P EA | 0 | C541 | 28-Jul-81 | | | |
| 035 | 8 | 137-5701 | 1A CAP DIP MICA 47 pF 5% 500V<br>C34 | RP P 1 P C P EA | 0 | C541 | 28-Jul-81 | | | |
| 034 | 8 | 137-5801 | 1A CAP DIP MICA 75 pF 5% 500V<br>C8 | RP P 1 C P EA | 0 | C541 | 28-Jul-81 | | | |
| 032 | 8 | 137-6101 | 1A CAP DIP MICA 100 pF 5% 500V<br>C33 | RP P 1 P C P EA | 0 | C541 | 28-Jul-81 | | | |
| 033 | 8 | 137-6301 | 1A CAP DIP MICA 150 pF 5% 500V<br>C9, C18, C17, C20 | RP P 1 C P EA | 0 | C541 | 28-Jul-81 | | | |
| 027 | 8 | 151-4701 | 1C INDUCTOR, 5.6 uH 10%<br>L1, L2 | RP P 1 * P EA | 0 | C395 | 28-Jul-81 | | | |
| 021 | 8 | 156-0100 | A DELAY LINE 14 PIN DIP 100 OHM, 50<br>DLY 2 | RP P 1 * P EA | 0 | 792 | 28-Jul-81 | | | |
| 022 | 8 | 156-0110 | A DELAY LINE 14 PIN DIP 500 OHM 100<br>DLY 1 | RP P 1 * P EA | 0 | 792 | 28-Jul-81 | | | |
| 007 | 8 | 301-0045 | A IC, 7445<br>U4 | RI P 1 C P EA | 0 | C063 | 28-Jul-81 | | | |
| 001 | 8 | 301-0074 | A IC, 7474<br>U2 | RI P 1 P C P EA | 0 | C063 | 28-Jul-81 | | | |
| 005 | 8 | 305-0014 | A IC, 74LS14<br>U30 | RI P 1 P B P EA | 0 | 442 | 28-Jul-81 | | | |
| 002 | 8 | 305-0174 | A IC, 74LS174<br>U29 | RI P 1 P B P EA | 0 | 442 | 28-Jul-81 | | | |
| 004 | 8 | 307-0064 | A IC, 74S64<br>U27 | RI P 1 B P EA | 0 | C063 | 28-Jul-81 | | | |
| 013 | 8 | 325-0102 | A QUAD 2-INPUT NOR GATE<br>U18 | RI P 1 C P EA | 0 | 741 | 28-Jul-81 | | | |
| 010 | 8 | 325-0107 | A TRIPLE 2-INPT EXCL OR/EXCL NOR GA<br>U10, U15 | RI P 1 C P EA | 0 | 741 | 28-Jul-81 | | | |
| 008 | 8 | 325-0114 | A TRIPLE LINE RECEIVER<br>U5, U14 | RI P 1 C P EA | 0 | 741 | 28-Jul-81 | | | |
| [illegible] | [illegible] | [illegible] | A TRIPLE LINE RECEIVER<br>U26, U9 | RI P 1 C P EA | 0 | 741 | 28-Jul-81 | | | |
| [illegible] | [illegible] | [illegible] | A DU[illegible] WID [illegible]-INPT OR-AND/OR-AND-I<br>U1[illegible] | RI P 1 C P EA | 0 | 741 | 28-Jul-81 | | | |

EFFECTIVITY DATE: ALL

INDENTED BILLS OF MATERIAL

PARENT PART: A9M1005 FG, PROFILE 'GENERIC' DRIVE - EURO UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
ERC: A SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | F P | PART DESCRIPTION / REMARKS | FR CD | S C | T Y | S P | A B | F I | UM | EXTENDED QTY PER | ECN CHG / START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 011 | 8 | 325-0131 | B | IC ECL HIGH SPEED DUAL D FLIP-FLO<br>U11,17,19,20,21,22 | RI | P | 1 | | C | P | EA | 0 | C25528-Jul-81 | | | |
| 004 | 8 | 327-0453 | A | IC, DUAL PERIPHERAL DRIVES<br>U3 | RI | P | 1 | | * | P | EA | 0 | 757 28-Jul-81 | | | |
| 096 | 8 | 335-0007 | A | PROG HEX 16 INPT REG AND-OR GT AR | RL | P | 1 | P | B | P | EA | 0 | 642 28-Jul-81 | | 02-Mar-82 | |
| 003 | 8 | 341-0069 | A | MEMPAL<br>PROG HEX 16 INPT<br>REG AND-OR GT ARY<br>U28 | RL | A | 1 | | * | P | EA | 0 | P10501-Mar-82 | | | |
| 014 | 8 | 351-2907 | A | IC TRANS ARRAY QUAD PNP GEN PURPO<br>U31, U23, U12 | RP | P | 1 | | C | P | EA | 0 | 750 28-Jul-81 | | | |
| 016 | 8 | 351-3127 | A | TRANSISTOR,ARRAY NPN HIGH FREQ.<br>U7 | RP | P | 1 | | C | P | EA | 0 | 750 28-Jul-81 | | | |
| 023 | 8 | 351-6700 | A | IC, TRANS. ARRAY QUAD COMP. PAIRS<br>U1, U24<br>ITEM 100-103 ALT P/N | RI | P | 1 | | C | P | EA | 0 | 750 28-Jul-81 | | | |
| 058 | 8 | 353-0005 | A | IC REG. +5V 100MA TO 92, 3 TERMNL<br>RG1 | RI | P | 1 | | C | P | EA | 0 | 792 28-Jul-81 | | | |
| 018 | 8 | 353-0319 | A | IC, HIGH SPEED DUAL COMPARATOR<br>U13 | RI | P | 1 | | C | P | EA | 0 | 750 28-Jul-81 | | | |
| 017 | 8 | 353-0353 | A | DUAL FET OP AMP/BUFFER<br>U25,U8 | RP | P | 1 | | C | P | EA | 0 | 750 28-Jul-81 | | | |
| 015 | 8 | 353-0592 | A | IC, VIDEO AMPLIFIER<br>U6 | RI | P | 1 | | C | P | EA | 0 | 750 28-Jul-81 | | | |
| 024 | 8 | 371-4152 | 1A | DIODE FAST SWITCH 1N4152 500mW 30<br>CR1-14, CR16-21,<br>CR23-24, CR26 | RP | P | 1 | | C | P | EA | 0 | C53828-Jul-81 | | | |
| 100 | 8 | 372-2222 | 1A | TRANS,NPN,SWITCHING AND AMP 2N222<br>ALT P/N FOR ITEM 23<br>U1-QTY 2 | | * | * | | * | * | EA | 0 | C40308-Jul-83 | | | |
| 101 | 8 | 372-2907 | A | XSTR,2N2907, PNP SWITCH & AMPLIFI<br>ALT P/N FOR ITEM 23<br>U1-QTY 2 | | * | * | | * | * | EA | 0 | C25908-Jul-83 | | | |
| 102 | 8 | 372-3904 | A | TRANSISTOR,NPN SW.&AMP. 2N3904<br>ALT P/N FOR ITEM 23<br>U24-QTY 2 | RP | P | 1 | P | C | P | EA | 0 | C30308-Jul-83 | | | |
| 103 | 8 | 372-3906 | 1B | TRANSISTOR,PNP SW.&AMP. 2N3906<br>ALT P/N FOR ITEM 23<br>U24-QTY 2 | RP | P | 1 | P | C | P | EA | 0 | C76808-Jul-83 | | | |
| 026 | 8 | 375-0010 | 1A | DIODE REFERENCE 10mA 1.2V<br>CR15 | RP | P | 1 | | C | P | EA | 0 | C53828-Jul-81 | | | |
| 019 | 8 | 375-0012 | 1A | DIODE DUAL VOLT VAR CAP 200mA 32V<br>Q2 | RP | P | 1 | | * | P | EA | 0 | C53828-Jul-81 | | | |
| 020 | 8 | 376-0016 | A | FET, N-CHANNEL VOLT CONTRL RESIS.<br>Q1 | RP | P | 1 | | * | P | EA | 0 | C30328-Jul-81 | | | |
| [illegible] | [illegible] | 511-0001 | [illegible] | SOCKET, IC [illegible] PIN | RP | P | 1 | P | C | P | EA | 0 | 799 28-Jul-81 | | 14-Apr-83 | |
| [illegible] | [illegible] | 511-1401 | [illegible] | SOCKET, IC 14 PIN | RP | P | 1 | P | C | P | EA | 0 | [illegible] 28-Jul-81 | | 14-Apr-83 | |
| [illegible] | [illegible] | 511-1601 | [illegible] | SOCKET, IC 16 PIN | RP | P | 1 | P | C | P | EA | 0 | 799 28-Jul-81 | | 14-Apr-83 | |
| [illegible] | [illegible] | 511-[illegible] | [illegible] | SOCKET, IC [illegible] PIN | RP | P | 1 | P | C | P | EA | 0 | 7[illegible] 28-Jul-81 | | 14-Apr-83 | |
| [illegible] | [illegible] | [illegible] | 1[illegible] | CONN,PIN,SINGLE | RP | P | 1 | P | C | P | EA | [illegible] | [illegible] | | | |

EFFECTIVITY DATE: ALL

INDENTED BILLS OF MATERIAL

PARENT PART: A9M1005 FG, PROFILE 'GENERIC' DRIVE - EURO UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
EBC: A SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | I F | PART DESCRIPTION / REMARKS | PR CD | S C | I Y | S F | A P | P L | UM | EXTENDED QTY PER | ECN CHG START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 087 | 8 | 515-0120 | 1A | CONN,HDR,SGL ROW,4P | RP | P | 1 | | * | P | EA | 0 | C78128-Jul-81 | | 02-Mar-82 | |
| 085 | 8 | 515-0130 | 1B | CONN,HDR,RT ANG,DBL ROW,8/16P | RP | P | 1 | | * | P | EA | 0 | C78128-Jul-81 | | | |
| | | | | J5 | | | | | | | | | | | | |
| 088 | 8 | 515-0131 | 1P | CONN,HDR,RT ANG,DBL ROW,17/34P | RP | P | 1 | | C | P | EA | 0 | C78101-Mar-82 | | 28-Aug-83 | |
| | | | | J2 | | | | | | | | | | | | |
| 086 | 8 | 515-0140 | 1A | CONN,HDR,RT ANG,5P,W/LKG RAMP | RP | P | 1 | | * | P | EA | 0 | C78128-Jul-81 | | | |
| | | | | J6-8 | | | | | | | | | | | | |
| 105 | 8 | 515-0380 | 1A | CONN,HDR,RT ANG,DBL ROW,17/34P | | * | * | | * | * | EA | 0 | C78129-Aug-83 | | | |
| | | | | J2 | | | | | | | | | | | | |
| 104 | 8 | 550-0101 | 1C | TUBING, HEAT SHRINK 1/4 ID BLACK | EX | X | 7 | P | C | P | FT | 0 | C50308-Jul-83 | | | |
| | | | | USE W/ALT P/N | | | | | | | | | | | | |
| | | | | 100-101 ON U1 | | | | | | | | | | | | |
| 095 | 8 | 820-0054 | AE | PCB, ANALOG PROFILE | RP | P | 1 | | * | P | EA | 0 | P21401-Mar-82 | | | |
| 001 | 6 | 699-0054 | A | ASSY, O.E.M. HEAD DISC (H.D.A.) | VX | A | 1 | P | A | P | EA | 0 | 600 14-Dec-82 | | | |
| 006 | 4 | 810-0090 | 1A | DRESS PANEL, DRIVE, PROFILE | RM | P | 1 | | * | P | EA | 0 | P56714-Dec-82 | | | |
| 007 | 4 | 810-0091 | 1B | DRESS PANEL, PWR SPLY PROFILE | RM | P | 1 | | * | P | EA | 0 | P64414-Dec-82 | | | |
| 012 | 4 | 825-0207 | B | LABEL, FCC NON COMPLIANCE APPLE 3 | EX | X | 7 | P | C | P | EA | 0 | P59321-Mar-83 | | | |
| 004 | 3 | 656-6121 | 3B | INACT.ASSY,CHASSIS,PROFILE-CLASS | | * | * | | * | * | EA | 1 | L30512-Dec-83 | | | |
| 003 | 4 | 400-1606 | 1C | SCR 6-32X3/8 PN HD CRS REC STL ZN | EX | X | 1 | P | C | P | EA | 1 | C54012-Dec-83 | | | |
| 013 | 4 | 403-1606 | 1C | SCR 6-32X3/8 PN CRS REC STL BL ZI | EX | X | 7 | S | C | U | EA | 16 | C54012-Dec-83 | | | |
| 009 | 4 | 430-1001 | 1C | SCR TAP 8-18X.437 PN CRS STL ZN | EX | X | 7 | P | C | P | EA | 3 | C54012-Dec-83 | | | |
| 002 | 4 | 656-5121 | 3A | INACT.SUBASSY,BASE,PROFILE-CLASS | | * | * | | * | * | EA | 1 | L30512-Dec-83 | | | |
| 005 | 5 | 400-1604 | 1C | SCR 6-32X1/4 PN HD CRS REC STL ZN | EX | X | 7 | | C | P | EA | 2 | C54012-Dec-83 | | | |
| 011 | 5 | 400-1608 | 1C | SCR 6-32X1/2 PN HD CRS REC STL ZN | EX | X | 7 | | C | P | EA | 1 | C54012-Dec-83 | | | |
| 012 | 5 | 436-1006 | 1C | SCR TAP 4-24X.250 PN CRS REC STL | | * | * | | * | * | EA | 1 | C54012-Dec-83 | | | |
| 001 | 5 | 699-5010 | 1A | PURCH ASSY,COATD BTM CVR,PRFLE-B | | * | * | | * | * | EA | 1 | P67612-Dec-83 | | | |
| 001 | 6 | 656-5021 | 6A | SUBASSY COVER,BOTTOM,PROFILE | | * | * | | * | * | EA | 1 | P40812-Dec-83 | | | |
| 002 | 7 | 805-0086 | 1A | SHIELD,CSA PROFILE | | * | * | | * | * | EA | 1 | P40801-Apr-83 | | | |
| 001 | 7 | 815-5008 | 1C | COVER, BOTTOM, PROFILE | RM | P | 1 | | * | P | EA | 1 | P40801-Apr-83 | | | |
| 008 | 5 | 805-0104 | A | SUPPORT, PROFILE | RP | P | 1 | | * | P | EA | 1 | P16812-Dec-83 | | | |
| 002 | 5 | 805-5022 | 1A | SUBPANEL,REAR,PROFILE | | * | * | | * | * | EA | 1 | P64412-Dec-83 | | | |
| 003 | 5 | 810-0095 | 1A | COVER DRIVE,BOTTOM,PROFILE | | * | * | | * | * | EA | 1 | P40812-Dec-83 | | | |
| 004 | 5 | 865-0005 | MA | FOOT, .52HT, SQ | EX | X | 7 | P | C | P | EA | 6 | 545 12-Dec-83 | | | |
| 015 | 4 | 656-5130 | 3D | INACT.MFG SUBASSY,COVER,PROFILE | | * | * | | * | * | EA | 1 | L30506-Jan-84 | | | |
| 004 | 5 | 590-0047 | 1B | CABLE, ASSY, LED, PROFILE | RC | P | 1 | | * | P | EA | 1 | P46414-Dec-82 | | | |
| 008 | 6 | 517-0041 | 1A | CONN,RCPT,INSUL. DISPL.,2P | RP | P | 1 | | * | U | EA | 1 | C78131-Aug-81 | | | |
| 003 | 6 | 550-0010 | A | TUBING, BRAIDED, 1/8 DIA. | EX | X | 7 | | * | U | IN | 24.5000 | P10931-Aug-81 | | | |
| 007 | 6 | 550-0101 | 1C | TUBING, HEAT SHRINK 1/4 ID BLACK | EX | X | 7 | P | C | P | FT | 2 | C50331-Aug-81 | | | |
| 006 | 6 | 550-0103 | 1C | TUBING, HEAT SHRINK 1/16 ID BLACK | EX | X | 7 | P | C | P | FT | 1 | C50331-Aug-81 | | | |
| 004 | 6 | 561-2600 | B | WIRE, BLACK 26 AWG, 7 X 34 | EX | X | 7 | P | * | P | FT | 25 | 764 31-Aug-81 | | | |
| 005 | 6 | 561-2622 | B | WIRE, 26 AWG STRAND. RED | EX | X | 7 | | * | U | FT | 25 | C01831-Aug-81 | | | |
| 001 | 6 | 710-0004 | MA | LED, RED APPLE III DISKCABLE | RP | X | 1 | P | C | P | EA | 1 | 552 31-Aug-81 | | | |
| 002 | 6 | 815-0190 | 0 | GROMET, PANEL MTG. FOR RECT. LAMP | RM | X | 1 | P | C | P | EA | 0 | 442 31-Aug-81 | | 26-Apr-83 | |
| 001 | 5 | 699-5011 | 1B | PURCH ASSY,COATD TOP CVR,PRFLE-B | | * | * | | * | * | EA | 1 | L05112-Dec-83 | | | |
| 001 | 6 | 815-5007 | 1C | COVER, TOP, PROFILE | RM | P | 1 | | * | P | EA | 1 | P40812-Dec-83 | | | |
| [illegible] | 5 | 815-0190 | 0 | GROMET, PANEL MTG. FOR RECT. LAMP | RM | X | 1 | P | C | P | EA | 1 | 442 22-Apr-83 | | | |
| [illegible] | [illegible] | [illegible] | 1C | COVER, TOP, PROFILE | RM | P | 1 | | * | P | EA | 0 | P4[illegible] | | 11-Dec-83 | |
| 005 | [illegible] | 825-[illegible]311 | 1B | LABEL, LOGO 13MM BY 16MM | EX | X | 7 | P | C | P | EA | 1 | P51114-Dec-82 | | 15-Feb-83 | |
| [illegible] | 5 | [illegible]-2517 | 1B | [illegible], NAMEPLATE, PROFILE | EX | P | 7 | | * | P | EA | 1 | P51414-Dec-82 | | 15-Feb-83 | |
| [illegible] | 5 | [illegible] | 1[illegible] | [illegible], LED PROFILE | EX | P | 7 | | * | P | EA | 1 | P51111-Dec-82 | | 15-Feb-83 | |

EFFECTIVITY DATE: ALL

INDENTED BILLS OF MATERIAL

PARENT PART: A9M1005 FG, PROFILE 'GENERIC' DRIVE - EURO UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
ERC: A SRCE CODE: R TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | I F | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S P | A B | P L | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 003 | 5 | 830-0025 | 3A | INACTIVE,REIDENTIFIED SEE 830-002 | | X | * | | * | P | EA | 2 | C611 | 14-Dec-82 | | | |
| 002 | 5 | 835-0005 | 1B | NUT. SPEED 'J' TYPE SIZE 8 | EX | X | 7 | P | C | P | EA | 3 | C744 | 14-Dec-82 | | | |
| 001 | 4 | 656-5151 | 3A | INACT.SUBASY,HDA/PWR SUP,PRFI-CLS | | * | * | | * | * | EA | 1 | L305 | 12-Dec-83 | | | |
| 004 | 5 | 159-0001 | B | TOROID, FERRITE | EX | P | 1 | P | C | P | EA | 2 | C-4 | 12-Dec-83 | | | |
| 003 | 5 | 341-0171 | A | MICROPRCSR-2K PROG ROM FORR PROFI | | * | * | | * | * | EA | 1 | P266 | 12-Dec-83 | | | |
| 001 | 5 | 656-5111 | 3B | INACT.SUBASY,PWR SPLY,PROFILE-CLS | | * | * | | * | * | EA | 1 | L305 | 12-Dec-83 | | | |
| 007 | 6 | 400-1603 | 1C | SCR 6-32X3/16 PN HD CRS REC STL Z | EX | P | 7 | | * | P | EA | 1 | C540 | 12-Dec-83 | | | |
| 008 | 6 | 400-1606 | 1C | SCR 6-32X3/8 PN HD CRS REC STL ZN | EX | X | 1 | P | C | P | EA | 1 | C540 | 12-Dec-83 | | | |
| 009 | 6 | 564-0010 | 1A | STRAP, GROUND, BRAIDED, 2.75' LON | | * | * | | * | * | EA | 1 | C707 | 12-Dec-83 | | | |
| 006 | 6 | 656-4102 | MC | ASSY, PCB TSTD, CONTROLLER | WT | A | 1 | | * | P | EA | 1 | P266 | 12-Dec-83 | | | |
| 002 | 7 | 337-8603 | B | IC SOCKET MICROPRO. W/24P PIGGYBA<br>U25 | RL | P | 1 | | * | P | EA | 1 | C148 | 05-May-82 | | 14-Oct-82 | |
| 001 | 7 | 656-0102 | 1M | ASSY,PCB,UNTSTD,CONTROLLER,PROFIL | WU | A | 1 | | * | P | EA | 1 | F651 | 31-Aug-81 | | | |
| 000 | 8 | 050-5006 | 1E | SCHEMATIC, CONTROLLER BD, PROFILE | D | D | 7 | | * | U | EA | 0 | F651 | 04-Jan-82 | | | |
| 063 | 8 | 101-4101 | 1A | RES 100 OHM 1/4W 5%<br>R20,R21 | RP | P | 1 | P | C | P | EA | 2 | C675 | 31-Aug-81 | | | |
| 038 | 8 | 101-4102 | 1A | RES 1K OHM 1/4W 5%<br>R15 | RP | P | 1 | P | C | P | EA | 1 | C675 | 31-Aug-81 | | 14-Oct-83 | |
| 016 | 8 | 101-4103 | 1A | RES 10K OHM 1/4W 5%<br>R19 | RP | P | 1 | P | C | P | EA | 1 | C675 | 31-Aug-81 | | | |
| 036 | 8 | 101-4152 | 1A | RES 1.5K OHM 1/4W 5%<br>R9,R10 | RP | P | 1 | P | C | P | EA | 2 | C675 | 31-Aug-81 | | | |
| 040 | 8 | 101-4201 | 1A | RES 200 OHM 1/4W 5%<br>R17 | RP | P | 1 | P | C | P | EA | 1 | C675 | 31-Aug-81 | | | |
| 042 | 8 | 101-4303 | 1A | RES 30K OHM 1/4W 5%<br>R1,R2,R4,R5 | RP | P | 1 | P | C | P | EA | 4 | C675 | 25-Mar-83 | | | |
| 037 | 8 | 101-4332 | 1A | RES 3.3K OHM 1/4W 5%<br>R3,R6,R7,R8,<br>R11,R12,R13,R18 | RP | P | 1 | P | C | P | EA | 8 | C675 | 31-Aug-81 | | | |
| 075 | 8 | 101-4333 | 1A | RES 33K OHM 1/4W 5%<br>R1,R2,R4,R5 | RP | P | 5 | P | C | P | EA | 4 | C675 | | | 24-Mar-83 | |
| 039 | 8 | 101-4392 | 1A | RES 3.9K OHM 1/4W 5%<br>R14 | RP | P | 1 | P | C | P | EA | 1 | C675 | 31-Aug-81 | | 14-Oct-83 | |
| 041 | 8 | 101-4510 | 1A | RES 51 OHM 1/4W 5%<br>R16 | RP | P | 1 | P | C | P | EA | 1 | C675 | 31-Aug-81 | | | |
| 077 | 8 | 101-4512 | 1A | RES 5.1K OHM 1/4W 5%<br>R22 | RP | P | 1 | P | C | P | EA | 1 | C675 | 25-Mar-83 | | | |
| 035 | 8 | 111-0021 | 1A | RES NETWORK 7 X 2K OHM 5%<br>RP1 | RP | P | 1 | P | C | P | EA | 1 | C675 | 31-Aug-81 | | | |
| 034 | 8 | 111-0022 | 1A | RES NETWORK 7 X 10K OHM 5%<br>RP2 | RP | P | 1 | P | C | P | EA | 1 | C675 | 31-Aug-81 | | | |
| 070 | 8 | 112-0102 | 1B | RES ARRAY 8 X 47 OHM 10% | RP | P | 1 | P | C | P | EA | 2 | C675 | 31-Aug-81 | | 12-Nov-81 | |
| 001 | 8 | 112-0105 | 1B | RES ARRAY 8 X 330 OHM<br>U1,U2 | RP | P | 1 | | * | P | EA | 2 | C675 | 13-Nov-81 | | 06-Nov-83 | |
| 081 | 8 | 112-0107 | 1B | RES ARRAY 8 X 100 OHM<br>U1,U2 | | * | * | | * | * | EA | 2 | C675 | 07-Nov-83 | | | |
| 04[illegible] | [illegible] | 12[illegible] | 1P | CAP ELECT 47 [illegible] 10% [illegible] 10V<br>C8,C21,C2[illegible],C30 | RP | P | 1 | | C | P | EA | 4 | C[illegible] | [illegible]-Aug-81 | | | |
| 045 | [illegible] | [illegible] | 1B | CAP CER AXIAL .1 UF +80%-20% 25V | RP | P | 1 | | C | P | EA | 31 | [illegible] | [illegible] | | | |
| [illegible] | [illegible] | [illegible] | A | CRYSTAL, 10MHz | [illegible] | P | 2 | | * | P | EA | 1 | [illegible] | [illegible] | | 11 Oct-8[illegible] | |

EFFECTIVITY DATE: ALL

I N D E N T E D  B I L L S  O F  M A T E R I A L

PARENT PART: A9M1005 FG, PROFILE 'GENERIC' DRIVE - EURO UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
ERC: A SRCE CODE: 6 TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | F T PART DESCRIPTION / REMARKS | PR S I S A P CD C I R R I UM | EXTENDED QTY PER | ECN FRB START DATE S/N | CLOSE DATE S/N |
|---|---|---|---|---|---|---|---|
| 078 | 8 | 197-0502 | 1A CLOCK OSC,CRYSTAL 10 MHz (TTL) | * * * * EA | 1 | C57415 Oct-83 | |
| 080 | 8 | 197-0504 | 1A CLOCK OSCILLATOR,CRYSTAL,10 MHz<br>ALT FOR ITEM 78<br>ALT QTY 1 | * * * * EA | 0 | C58416-Oct-83 | |
| 029 | 8 | 301-0006 | A IC, '406<br>U41 | EX P 7 * P EA | 1 | C06331-Aug-81 | |
| 009 | 8 | 305-0000 | A IC, 74LS00N<br>U15,U26 | RI P 1 P B P EA | 2 | 442 31-Aug-81 | |
| 026 | 8 | 305-0002 | A IC, 74LS02N<br>U31 | RI P 1 P B P EA | 1 | 442 31-Aug-81 | |
| 025 | 8 | 305-0008 | A IC, 74LS08<br>U32 | RI P 1 P B P EA | 1 | 442 31-Aug-81 | |
| 017 | 8 | 305-0014 | A IC, 74LS14<br>U23 | RI P 1 P B P EA | 1 | 442 31-Aug-81 | |
| 027 | 8 | 305-0038 | A IC, 74LS38 QUAD 2 INPUT BUFFER<br>U24 | RI P 1 P B P EA | 1 | 649 31-Aug-81 | |
| 019 | 8 | 305-0109 | A IC, 74LS109<br>U36 | RI P 1 P B P EA | 1 | 442 31-Aug-81 | |
| 014 | 8 | 305-0153 | A IC, 74LS153<br>U6 | RI P 1 P B P EA | 1 | 442 31-Aug-81 | |
| 006 | 8 | 305-0161 | A IC, 74LS161<br>U10,U16,U17 | RI P 1 P B P EA | 3 | 442 31-Aug-81 | |
| 020 | 8 | 305-0163 | A IC, 74LS163<br>U22 | RI P 1 P B P EA | 1 | 442 31-Aug-81 | |
| 013 | 8 | 305-0174 | A IC, 74LS174<br>U30,U34,U38 | RI P 1 P B P EA | 3 | 442 31-Aug-81 | |
| 003 | 8 | 305-0240 | A IC, 74LS240<br>U9 | RI P 1 B P EA | 1 | C12731-Aug-81 | |
| 002 | 8 | 305-0244 | A IC, 74LS244<br>U4,U5 | RI P 1 P B P EA | 2 | 442 31-Aug-81 | |
| 010 | 8 | 305-0257 | A IC, 74LS257<br>U13,U20 | RI P 1 P B P EA | 2 | 442 31-Aug-81 | |
| 030 | 8 | 305-0280 | A IC, 74LS280 9-BIT PARITY<br>U3 | RI P 1 P B P EA | 1 | 649 31-Aug-81 | |
| 015 | 8 | 305-0323 | A IC, 74LS323<br>U14 | RI P 1 P B P EA | 1 | 442 31-Aug-81 | |
| 047 | 8 | 305-0377 | A IC, 74LS377<br>U21 | RI P 1 P B P EA | 1 | 442 31-Aug-81 | |
| 024 | 8 | 307-0074 | A IC, 74S74<br>U39 | RI P 1 P B P EA | 1 | C06331-Aug-81 | |
| 011 | 8 | 307-0086 | A IC, 74S86<br>U28 | RI P 1 P B P EA | 1 | C06331-Aug-81 | |
| 008 | 8 | 334-2114 | 1C IC 1024x4 STATIC RAM 2114 TST&BRN<br>U11,U18 | RI P 1 P C P EA | 2 | C62131-Aug-81 | |
| 000 | 9 | 062-0087 | 1B SPEC, 2114 RAM BURN-IN | EX D 7 * U EA | 0 | 071415-Jul-83 | |
| [illegible] | [illegible] | 333-2114 | 1B IC 1024 X [illegible] STATIC RAM 2114 | RL P 1 C P EA | [illegible] | [illegible]-Jul-83 | |
| [illegible] | [illegible] | [illegible]-0004 | A PROM, [illegible] (UNPROGRAMMED) | RL P 1 P [illegible] P EA | 1 | [illegible] Aug-81 | 12-Nov-81 |
| [illegible] | [illegible] | [illegible]-0068 | A PROG ORI [illegible] INPT AND OR-INVT GT A | RL P 1 P B P EA | 1 | [illegible] 31-Aug-81 | 12-Nov-81 |
| [illegible] | [illegible] | [illegible] | A PROM, MMI [illegible] | RL P 1 P [illegible] P EA | 1 | [illegible] 31-Aug-81 | 12-Nov-81 |
| [illegible] | [illegible] | [illegible] | [illegible] PROGRAMMABLE INTERVAL TIMER | RL P 1 P A P EA | 1 | [illegible] | |

EFFECTIVITY DATE: ALL

I N D E N T E D B I L L S O F M A T E R I A L

PARENT PART: A9M1005 FG, PROFILE 'GENERIC' DRIVE - EURO UM: EA PROD CODE: DH ECN: F354 ASSEMBLY QTY: 1
ERC: A SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E P | PART DESCRIPTION / REMARKS | PR CD | S CY | T YP | S FB | A RB | P LE | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | U33 | | | | | | | | | | | | | |
| 004 | 8 | 337-8603 | B | IC SOCKET MICROPRO. W/24P PIGGYBA | RI | P | 1 | | * | P | EA | 1 | C148 | 31-Aug-81 | | 04-May-82 | |
| | | | | U25 | | | | | | | | | | | | | |
| 018 | 8 | 33?-9401 | A | CRC GENERATOR/CHECKER | RL | P | 1 | P | A | P | EA | 1 | 642 | 31-Aug-81 | | | |
| | | | | U35 | | | | | | | | | | | | | |
| 021 | 8 | 341-0066 | A | PROM, U29 | RL | A | 1 | | * | P | EA | 1 | P105 | 13-Nov-81 | | | |
| | | | | (MMI 6309-1) | | | | | | | | | | | | | |
| 022 | 8 | 341-0067 | A | PROM, U37 | RL | A | 1 | | * | P | EA | 1 | P105 | 13-Nov-81 | | | |
| 007 | 8 | 341-0068 | A | RAMPAL | RL | P | 1 | | * | P | EA | 1 | P105 | 13-Nov-81 | | | |
| | | | | U27 (OCT 16 INPT | | | | | | | | | | | | | |
| | | | | AND-OR-INVI GT ARY) | | | | | | | | | | | | | |
| 031 | 8 | 341-0080 | B | PROG PROM 2K PROFILE CONTROLLER | RL | P | 1 | | * | P | EA | 1 | P184 | 13-Nov-81 | | 04-May-82 | |
| 074 | 8 | 341-0129 | A | EPROM-FIRMWARE 3.90 Z8 PROFILE-27 | RL | A | 1 | | * | P | EA | 1 | P110 | 31-Aug-81 | | 12-Nov-81 | |
| 001 | 9 | 335-2716 | A | EPROM, 2048 X 8 2716 | RL | P | 1 | P | C | P | EA | 1 | 642 | 31-Aug-81 | | | |
| 028 | 8 | 351-2074 | A | QUAD DARLINGTON XSTR ARRAY 2074B | RP | P | 1 | P | B | P | EA | 2 | 642 | 31-Aug-81 | | | |
| | | | | U7,U8 | | | | | | | | | | | | | |
| 023 | 8 | 359-4024 | A | VOLTAGE CONTROLLED MULTIVIBRATOR | RI | P | 1 | P | B | P | EA | 1 | 642 | 31-Aug-81 | | 14-Oct-83 | |
| | | | | U40 | | | | | | | | | | | | | |
| 033 | 8 | 371-4001 | 1A | DIODE RECTIFIER 1N4001 1.0A 50V | RP | P | 1 | P | C | P | EA | 8 | C599 | 31-Aug-81 | | | |
| | | | | CR1-CR8 | | | | | | | | | | | | | |
| 076 | 8 | 371-4128 | 1A | DIODE ZENER 1N4128 250mW 60V | RP | P | 1 | | * | P | EA | 4 | C538 | 31-Aug-81 | | 12-Nov-81 | |
| 064 | 8 | 371-4148 | A | DIODE FAST SWITCH 1N4148 200mA 75 | RP | P | 1 | P | C | P | EA | 4 | C538 | 13-Nov-81 | | | |
| | | | | CR9-CR12 | | | | | | | | | | | | | |
| 062 | 8 | 400-1406 | 1C | SCR 4-40X3/8 PN HD CRS REC STL ZN | EX | X | 7 | P | C | P | EA | 2 | C540 | 31-Aug-81 | | | |
| 055 | 8 | 511-1401 | C | SOCKET, IC 14 PIN | RP | P | 1 | P | C | P | EA | 3 | 799 | 07-Apr-83 | | | |
| 056 | 8 | 511-1601 | C | SOCKET, IC 16 PIN | RP | P | 1 | P | C | P | EA | 11 | 799 | 31-Aug-81 | | | |
| 057 | 8 | 511-1801 | C | SOCKET, IC 18 PIN | RP | P | 1 | P | C | P | EA | 2 | 799 | 31-Aug-81 | | | |
| 058 | 8 | 511-2001 | C | SOCKET, IC 20 PIN | RP | P | 1 | P | C | P | EA | 7 | 799 | 31-Aug-81 | | | |
| 059 | 8 | 511-2401 | C | SOCKET, IC 24 PIN | RP | P | 1 | P | C | P | EA | 1 | 799 | 31-Aug-81 | | | |
| 060 | 8 | 511-4001 | C | SOCKET, IC 40 PIN | RP | P | 1 | P | C | P | EA | 1 | 799 | 31-Aug-81 | | | |
| 061 | 8 | 515-0005 | 1B | CONN,PIN,SINGLE | RP | P | 1 | P | C | P | EA | 9 | C781 | 31-Aug-81 | | | |
| 054 | 8 | 515-0053 | 1C | CONN,HDR,STR,2P | RP | P | 1 | P | C | P | EA | 1 | C781 | 31-Aug-81 | | | |
| | | | | P7 | | | | | | | | | | | | | |
| 053 | 8 | 515-0082 | 1A | HEADER, 10 PIN RT ANGLE W/O EARS | RP | P | 1 | | C | P | EA | 1 | C480 | 31-Aug-81 | | 16-Nov-82 | |
| | | | | P5 | | | | | | | | | | | | | |
| 066 | 8 | 515-0150 | 1A | CONN,HDR,RT ANG,5P,.156 CTR,W/LKG | RP | P | 1 | | * | P | EA | 1 | C781 | 13-Nov-81 | | | |
| | | | | P3 | | | | | | | | | | | | | |
| 067 | 8 | 515-0160 | 1A | CONN,HDR,RT ANG,2P,W/LKG RAMP | RP | P | 1 | | * | P | EA | 1 | C781 | 13-Nov-81 | | | |
| | | | | P4 | | | | | | | | | | | | | |
| 065 | 8 | 519-0100 | 1B | CONN,PC TAIL,90 DEG,MET.LNG FTPRI | RP | P | 1 | | * | P | EA | 1 | C781 | 13-Nov-81 | | | |
| | | | | P1 | | | | | | | | | | | | | |
| 049 | 8 | 520-0011 | 1A | CONN,PLUG,CONTACT KEY,'D' SUB | RP | P | 1 | | C | P | EA | 1 | C781 | 31-Aug-81 | | | |
| | | | | P1 | | | | | | | | | | | | | |
| 079 | 8 | 570-2239 | 1A | WIRE,STRANDED 22 AWG,GREEN,BULK | | * | * | | * | * | FT | 0.0420 | C509 | 15-Oct-83 | | | |
| [illegible] | [illegible] | 5?1-0001 | A | WIRE, BUS BAR, 20 AWG, .5 IN. | EX | X | 7 | | * | U | FT | 1 | P?? | 13-Nov-81 | | 14-Oct-83 | |
| [illegible] | [illegible] | [illegible] | 1B | PCB, CONTROLLER, PROFILE | RF | P | 1 | | * | P | EA | 1 | [illegible] | [illegible] | | | |
| [illegible] | [illegible] | [illegible] | A | NUT, WASHER ASSY, ... 4-40 | FX | P | 7 | | * | P | EA | 2 | [illegible] | [illegible] | | | |
| [illegible] | [illegible] | [illegible] | 1A | PURCHASED ASSY,DOMESTIC PWR SUPPL | | * | * | | * | * | EA | 1 | [illegible] | [illegible] | | | |
| [illegible] | [illegible] | [illegible] | A | LABEL, WARNING PWR SUP PROFILE | FX | P | 7 | | * | P | [illegible] | 1 | [illegible] | [illegible] | | | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | FX | [illegible] | [illegible] | | C | P | [illegible] | [illegible] | [illegible] | [illegible] | | | |

EFFECTIVITY DATE: ALL

INDENTED BILLS OF MATERIAL

PARENT PART: A9M1005 FG, PROFILE 'GENERIC' DRIVE - EURO UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
LRC: A SRCE CODE: C TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S F | A B | F I | UM | EXTENDED QTY PER | ECN CHG / START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 003 | 4 | 860-0213 | 1A STANDOFF,6-32,5/16",METAL JACKNUT | | * | * | | * | * | EA | 1 | C32512-Dec 83 | | | |
| 002 | 5 | 656-5140 | 3B INACT.MFG.SUBASSY,H.D.A.,PROFILE | | * | * | | * | * | EA | 1 | L30512-Dec 83 | | | |
| 005 | 5 | 400-1604 | 1C SCR 6-32X1/4 PN HD CRS REC STL ZN | FX | X | 7 | | C | P | EA | 4 | C54014-Dec-82 | | | |
| 004 | 6 | 590-0048 | 1B CABLE, ASSY, CNTRLR TO ANALOG PCB | RC | P | 1 | | * | P | EA | 1 | P60314-Dec-82 | | | |
| 001 | 7 | 513-0020 | 1B CONN,CD EDG,IDC,17/34P,W/O EAR | RP | P | 1 | | * | U | EA | 1 | C78131-Aug-81 | | | |
| 002 | 7 | 517-0035 | 1B CONN,SKT,INSUL. DISPL.,17/34P | RP | P | 1 | | C | U | EA | 1 | C78131-Aug-81 | | | |
| 003 | 7 | 569-0204 | 1B CABLE, FLAT 34 CONDUCTOR | | * | * | | * | * | FT | 3.6200 | C52301-Oct-83 | | | |
| 004 | 7 | 590-0053 | 3A REIDENTIFY SEE 569-0204 | RC | P | 1 | | * | P | FT | 3.6200 | C523 | | 30-Sep-83 | |
| 002 | 6 | 590-0105 | A CABLE ASSY, #16 AWG GROUND WIRE | | P | * | | * | P | EA | 1 | P18014-Dec-82 | | | |
| 003 | 7 | 517-1102 | 1B TERMINAL, RING TONGUE #8 | | P | * | | * | P | EA | 1 | C34401-Mar-82 | | | |
| 002 | 7 | 517-1211 | 1A TERMINAL, RECEPT 4.75 X .51 TAB | | P | * | | * | P | EA | 1 | C62801-Mar-82 | | | |
| 001 | 7 | 570-1601 | A WIRE, 16 AWG, GRAY, 26/30, 4.80" | | X | * | | * | P | EA | 1 | C05701-Mar-82 | | | |
| 003 | 6 | 656-4101 | A ASSY, PCB TSTD, ANALOG | WT | A | 1 | | * | P | EA | 1 | P11114-Dec-82 | | | |
| 001 | 7 | 656-0101 | 1P ASSY, PCB UNTSTD, ANALOG, PROFILE | WU | A | 1 | | * | P | EA | 1 | L05031-Aug-81 | | | |
| 000 | 8 | 050-5005 | 1J SCHEMATIC, ANALOG BD, PROFILE | D | D | 7 | | * | U | EA | 0 | P69701-Mar-82 | | | |
| 050 | 8 | 101-4010 | 1A RES 1 OHM 1/4W 5%<br>R101 | RP | P | 1 | S | C | P | EA | 1 | C67528-Jul-81 | | | |
| 051 | 8 | 101-4101 | 1A RES 100 OHM 1/4W 5%<br>R4,67 | RP | P | 1 | P | C | P | EA | 2 | C67528-Jul-81 | | | |
| 053 | 8 | 101-4102 | 1A RES 1K OHM 1/4W 5%<br>R2-3,R15,R20-21<br>R38-39,R48,R54,R59<br>R60-62,R85-88<br>R106,R108 | RP | P | 1 | P | C | P | EA | 19 | C67528-Jul-81 | | | |
| 038 | 8 | 101-4103 | 1A RES 10K OHM 1/4W 5%<br>R13,17,42-45,47<br>R49,70,81,117 | RP | P | 1 | P | C | P | EA | 11 | C67528-Jul-81 | | | |
| 083 | 8 | 101-4104 | 1A RES 100K OHM 1/4W 5%<br>R115 | RP | P | 1 | P | C | P | EA | 1 | C67528-Jul-81 | | | |
| 080 | 8 | 101-4111 | 1A RES 110 OHM 1/4W 5%<br>R91,92 | RP | P | 1 | | C | P | EA | 2 | C67528-Jul-81 | | | |
| 064 | 8 | 101-4121 | 1A RES 120 OHMS 1/4W 5%<br>R25,26 | RP | P | 1 | P | C | P | EA | 2 | C67528-Jul-81 | | | |
| 077 | 8 | 101-4122 | 1A RES 1.2K OHM 1/4W 5%<br>R107 | RP | P | 1 | P | C | P | EA | 1 | C67528-Jul-81 | | | |
| 075 | 8 | 101-4123 | 1A RES 12K OHM 1/4W 5%<br>R73 | RP | P | 1 | P | C | P | EA | 1 | C67528-Jul-81 | | | |
| 072 | 8 | 101-4151 | 1A RES 150 OHM 1/4W 5%<br>R36,68,114 | RP | P | 1 | P | C | P | EA | 3 | C67528-Jul-81 | | | |
| 061 | 8 | 101-4152 | 1A RES 1.5K OHM 1/4W 5%<br>R7,82,83 | RP | P | 1 | P | C | P | EA | 3 | C67528-Jul-81 | | | |
| 056 | 8 | 101-4182 | 1A RES 1.8K OHM 1/4W 5%<br>R69 | RP | P | 1 | P | C | P | EA | 1 | C67528-Jul-81 | | | |
| 081 | 8 | 101-4201 | 1A RES 200 OHM 1/4W 5%<br>R110 | RP | P | 1 | P | C | P | EA | 1 | C67528-Jul-81 | | | |
| [illegible] | [illegible] | [illegible] | 1A RES 20.0K OHM 1/4W 5%<br>[illegible] | RP | P | 1 | P | C | P | EA | [illegible] | [illegible]-Jul-81 | | | |
| [illegible] | [illegible] | [illegible] | 1A [illegible] OHM 1/4W 5%<br>[illegible] | RP | P | 1 | P | C | P | EA | 3 | [illegible]-Jul-81 | | | |
| [illegible] | [illegible] | [illegible] | 1A [illegible] 240 OHM 1/4W [illegible] | RP | P | 1 | P | C | P | EA | [illegible] | [illegible] | | | |

EFFECTIVITY DATE: ALL

INDENTED BILLS OF MATERIAL

PARENT PART: A9M1005 FS, PROFILE 'GENERIC' DRIVE - ELRO UM: EA PROD CODE: DH ECN: F354 ASSEMBLY QTY: 1
ERC: A SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | I R | PART DESCRIPTION / REMARKS | PR S T S A F CD C Y P B L UM | EXTENDED QTY PER | ECN CHG START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | R18,19 | | | | | | |
| 079 | 8 | 101-4242 | 1A | RES 2.4K OHM 1/4W 5% <br> R80,40,41 | RP P 1 P C P EA | 3 | C67528-Jul-81 | | | |
| 067 | 8 | 101-4243 | 1A | RES 24K OHM 1/4W 5% <br> R35 | RP P 1 P C P EA | 1 | C67528-Jul-81 | | | |
| 066 | 8 | 101-4244 | 1A | RES 240K OHM 1/4W 5% <br> R31 | RP P 1 P C P EA | 1 | C67528-Jul-81 | | | |
| 078 | 8 | 101-4272 | 1A | RES 2.7K OHM 1/4W 5% <br> R74 | RP P 1 P C P EA | 1 | C67528-Jul-81 | | | |
| 082 | 8 | 101-4301 | 1A | RES 300 OHM 1/4W 5% <br> R111 | RP P 1 P C P EA | 1 | C67528-Jul-81 | | | |
| 070 | 8 | 101-4331 | 1A | RES 330 OHM 1/4W 5% <br> R89,90 | RP P 1 P C P EA | 2 | C67528-Jul-81 | | | |
| 073 | 8 | 101-4332 | 1A | RES 3.3K OHM 1/4W 5% <br> R100,76 | RP P 1 P C P EA | 2 | C67528-Jul-81 | | | |
| 049 | 8 | 101-4390 | 1A | RES 39 OHM 1/4W 5% <br> R78,R112 | RP P 1 P C P EA | 2 | C67528-Jul-81 | | | |
| 054 | 8 | 101-4391 | 1A | RES 390 OHM 1/4W 5% <br> R55 | RP P 1 P C P EA | 1 | C67528-Jul-81 | | | |
| 060 | 8 | 101-4392 | 1A | RES 3.9K OHM 1/4W 5% <br> R9,8,113,1,27 <br> R118,119 | RP P 1 P C P EA | 7 | C67513-Apr-83 | | | |
| 052 | 8 | 101-4471 | 1A | RES 470 OHM 1/4W 5% <br> R37,52-53,77 | RP P 1 P C P EA | 4 | C67528-Jul-81 | | | |
| 084 | 8 | 101-4473 | 1A | RES 47K OHM 1/4W 5% <br> R116,71 | RP P 1 P C P EA | 2 | C67528-Jul-81 | | | |
| 065 | 8 | 101-4511 | 1A | RES 510 OHM 1/4W 5% <br> R63,64,29,30,28 | RP P 1 P C P EA | 5 | C67528-Jul-81 | | | |
| 071 | 8 | 101-4561 | 1A | RES 560 OHM 1/4W 5% <br> R99 | RP P 1 P C P EA | 1 | C67528-Jul-81 | | | |
| 045 | 8 | 101-4681 | 1A | RES 680 OHMS 1/4W 5% <br> R11-12,R22 | RP P 1 P C P EA | 3 | C67528-Jul-81 | | | |
| 074 | 8 | 101-4751 | 1A | RES 750 OHM 1/4W 5% <br> R75,79 | RP P 1 C P EA | 2 | C67528-Jul-81 | | | |
| 063 | 8 | 101-4752 | 1A | RES 7.5K OHM 1/4W 5% <br> R5,6,33,34 | RP P 1 P C P EA | 4 | C67528-Jul-81 | | | |
| 076 | 8 | 101-4822 | 1A | RES 8.2K OHM 1/4W 5% <br> R72 | RP P 1 P C P EA | 1 | C67528-Jul-81 | | | |
| 057 | 8 | 101-4823 | 1A | RES 82K OHM 1/4W 5% <br> R46 | RP P 1 C P EA | 1 | C67528-Jul-81 | | | |
| 048 | 8 | 108-1543 | 1A | RES 1.54K OHM 1/4W 1% <br> R84 | RP P 1 C P EA | 1 | C75828-Jul-81 | | | |
| 042 | 8 | 108-1783 | 1A | RES 1.78K OHM 1/4W 1% <br> R10 | RP P 1 C P EA | 1 | C75828-Jul-81 | | | |
| 041 | 8 | 108-1963 | 1A | RES 1.96K OHM 1/4W 1% <br> R105,104 | RP P 1 * P EA | 2 | C75901-Mar-82 | | | |
| 043 | [illegible] | [illegible] | 1A | RES 3.83K OHM 1/4W 1% <br> R93,R95-96,R97 | RP P 1 * P EA | 4 | C75831-Jul-81 | | | |
| [illegible] | [illegible] | [illegible] | 1A | RES ?.92K OHM 1/4W 1% <br> R4?,?? | RP P 1 P C P EA | 2 | C758?8-Jul-81 | | | |

EFFECTIVITY DATE: ALL

I N D E N T E D   B I L L S   O F   M A T E R I A L

PARENT PART: A9M1005 — EG, PROFILE 'GENERIC' DRIVE - EURO — UM: EA — PROD CODE: DH — ECN: P354 — ASSEMBLY QTY: 1
ERC: A — SRCE CODE: G — TYPE: 1 — ARC: * — PLAN CODE: P — DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S P | A R | P I | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 046 | 8 | 108-4531 | 1A | RES 45.3 OHM 1/4W 1%<br>R14 | RP | P | 1 | | C | P | EA | 1 | C750 | 28-Jul-81 | | | |
| 043 | 8 | 108-5623 | 1A | RES 5.62K OHM 1/4W 1%<br>R94,R98 | RP | P | 1 | | C | P | EA | 2 | C750 | 28-Jul-81 | | | |
| 106 | 8 | 109-0002 | 0 | POT, TRIM 1K OHM 20% | RP | P | 1 | P | C | P | EA | 1 | 442 | 10-Oct-83 | | | |
| 040 | 8 | 109-0005 | A | POT,TRIM 500 OHM,20%<br>ALTN P/N 109-0420 | RP | P | 1 | | * | P | EA | 1 | C045 | 18-May-82 | | 09-Oct-83 | |
| 098 | 8 | 109-0410 | 1A | POT, 500 OHM 18 - 25 TURNS | RP | P | 1 | | C | P | EA | 1 | C504 | 28-Jul-81 | | 02-Mar-82 | |
| 099 | 8 | 109-0420 | MA | POT, 1 TURN .250 DIA, 500 OHMS<br>ALTN P/N FOR ITEM 40 | RP | P | 1 | | C | P | EA | 0 | P105 | 18-May-82 | | 09-Oct-83 | |
| 038 | 8 | 111-0023 | 1A | RES NETWORK 7 X 560 OHM 5%<br>RP2-8 | RP | P | 1 | | C | P | EA | 7 | C675 | 28-Jul-81 | | | |
| 094 | 8 | 111-0024 | 1A | RES NETWORK 7 X 4.7K OHM 5%<br>RP-1 | RP | P | 1 | | C | P | EA | 1 | C675 | 28-Jul-81 | | | |
| 059 | 8 | 127-0100 | 1B | CAP TANT 4.7 uF 20% 10V<br>C59 | RP | P | 1 | | * | P | EA | 1 | C599 | 28-Jul-81 | | | |
| 037 | 8 | 127-0101 | 1B | CAP TANT 10 uF 20% 15/16V<br>C38-C40 | RP | P | 1 | | * | P | EA | 3 | C599 | 28-Jul-81 | | | |
| 029 | 8 | 130-0002 | 1B | CAP CER AXIAL .01 UF +80%-20% 25V<br>C1,2,6,7 | RP | P | 1 | P | C | P | EA | 4 | C939 | 28-Jul-81 | | | |
| 097 | 8 | 130-0003 | 1B | CAP CER AXIAL .1 UF +80%-20% 25V<br>C13,C14 | RP | P | 1 | P | C | P | EA | 2 | C939 | | | 14-Apr-83 | |
| 028 | 8 | 130-0007 | 1B | CAP CER AXIAL .1 UF +80%-20% 25V<br>C3-5,10-16,21,22,25,<br>C27,35-37,42-45,47<br>C48-51,53,55-57,63 | RP | P | 1 | | C | P | EA | 31 | C939 | 01-Mar-82 | | | |
| 031 | 8 | 130-0200 | 1A | CAP CER .001 uF 10% 25V<br>C24, C32 | RP | P | 1 | | C | P | EA | 2 | C599 | 28-Jul-81 | | | |
| 030 | 8 | 130-0201 | 1A | CAP CER .0022 uF 10% 25V<br>C19,23,28-31,26,62 | RP | P | 1 | | C | P | EA | 8 | C599 | 28-Jul-81 | | | |
| 036 | 8 | 137-5401 | 1A | CAP DIP MICA 20 pF 5% 500V<br>C61 | RP | P | 1 | | C | P | EA | 1 | C541 | 28-Jul-81 | | | |
| 035 | 8 | 137-5701 | 1A | CAP DIP MICA 47 pF 5% 500V<br>C34 | RP | P | 1 | P | C | P | EA | 1 | C541 | 28-Jul-81 | | | |
| 034 | 8 | 137-5801 | 1A | CAP DIP MICA 75 pF 5% 500V<br>C8 | RP | P | 1 | | C | P | EA | 1 | C541 | 28-Jul-81 | | | |
| 032 | 8 | 137-6101 | 1A | CAP DIP MICA 100 pF 5% 500V<br>C33 | RP | P | 1 | P | C | P | EA | 1 | C541 | 28-Jul-81 | | | |
| 033 | 8 | 137-6301 | 1A | CAP DIP MICA 150 pF 5% 500V<br>C9, C18, C17, C20 | RP | P | 1 | | C | P | EA | 4 | C541 | 28-Jul-81 | | | |
| 027 | 8 | 151-4701 | 1C | INDUCTOR, 5.6 uH 10%<br>L1, L2 | RP | P | 1 | | * | P | EA | 2 | C395 | 28-Jul-81 | | | |
| 021 | 8 | 156-0100 | A | DELAY LINE 14 PIN DIP 100 OHM, 50<br>DLY 2 | RP | P | 1 | | * | P | EA | 1 | 792 | 28-Jul-81 | | | |
| 022 | 8 | 156-0110 | A | DELAY LINE 14 PIN DIP 500 OHM 100<br>DLY 1 | RP | P | 1 | | * | P | EA | 1 | 792 | 28-Jul-81 | | | |
| [illegible] | | [illegible]45 | A | [illegible] 7445<br>U4 | RI | P | 1 | | C | P | EA | 1 | [illegible] | 28-Jul-81 | | | |
| [illegible] | | [illegible]4 | A | [illegible] 7474<br>U | RI | P | 1 | P | C | P | EA | 1 | [illegible] | 28-Jul-81 | | | |

EFFECTIVITY DATE: ALL

# I N D E N T E D   B I L L S   O F   M A T E R I A L

PARENT PART: A9M1005    FG, PROFILE 'GENERIC' DRIVE - EURO    UM: EA    PROD CODE: DH    ECN: P354    ASSEMBLY QTY: 1
ERC: A    SRCE CODE: G    TYPE: 1    ABC: *    PLAN CODE: P    DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S P | A B | P I | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 005 | 8 | 305-0014 | A | IC, 74LS14 | RI | P | 1 | P | B | P | EA | 1 | 442 | 28-Jul-81 | | | |
| | | | | U30 | | | | | | | | | | | | | |
| 002 | 8 | 305-0174 | A | IC, 74LS174 | RI | P | 1 | P | B | P | EA | 1 | 442 | 28-Jul-81 | | | |
| | | | | U29 | | | | | | | | | | | | | |
| 004 | 8 | 307-0064 | A | IC, 74S64 | RI | P | 1 | | B | P | EA | 1 | C063 | 28-Jul-81 | | | |
| | | | | U27 | | | | | | | | | | | | | |
| 013 | 8 | 325-0102 | A | QUAD 2-INPUT NOR GATE | RI | P | 1 | | C | P | EA | 1 | 741 | 28-Jul-81 | | | |
| | | | | U18 | | | | | | | | | | | | | |
| 010 | 8 | 325-0107 | A | TRIPLE 2-INPT EXCL OR/EXCL NOR GA | RI | P | 1 | | C | P | EA | 2 | 741 | 28-Jul-81 | | | |
| | | | | U10, U15 | | | | | | | | | | | | | |
| 008 | 8 | 325-0114 | A | TRIPLE LINE RECEIVER | RI | P | 1 | | C | P | EA | 2 | 741 | 28-Jul-81 | | | |
| | | | | U5, U14 | | | | | | | | | | | | | |
| 009 | 8 | 325-0116 | A | TRIPLE LINE RECEIVER | RI | P | 1 | | C | P | EA | 2 | 741 | 28-Jul-81 | | | |
| | | | | U26, U9 | | | | | | | | | | | | | |
| 012 | 8 | 325-0117 | A | DL 2-WID 2-3-INPT OR-AND/OR-AND-I | RI | P | 1 | | C | P | EA | 1 | 741 | 28-Jul-81 | | | |
| | | | | U16 | | | | | | | | | | | | | |
| 011 | 8 | 325-0131 | B | IC ECL HIGH SPEED DUAL D FLIP-FLO | RI | P | 1 | | C | P | EA | 6 | C255 | 28-Jul-81 | | | |
| | | | | U11,17,19,20,21,22 | | | | | | | | | | | | | |
| 006 | 8 | 327-0453 | A | IC, DUAL PERIPHERAL DRIVES | RI | P | 1 | | * | P | EA | 1 | 757 | 28-Jul-81 | | | |
| | | | | U3 | | | | | | | | | | | | | |
| 096 | 8 | 335-0007 | A | PROG HEX 16 INPT REG AND-OR GT AR | RL | P | 1 | P | B | P | EA | 1 | 642 | 28-Jul-81 | | 02-Mar-82 | |
| 003 | 8 | 341-0069 | A | MEMPAL | RL | A | 1 | | * | P | EA | 1 | P105 | 01-Mar-82 | | | |
| | | | | PROG HEX 16 INPT | | | | | | | | | | | | | |
| | | | | REG AND-OR GT ARY | | | | | | | | | | | | | |
| | | | | U28 | | | | | | | | | | | | | |
| 014 | 8 | 351-2907 | A | IC TRANS ARRAY QUAD PNP GEN PURPO | RP | P | 1 | | C | P | EA | 3 | 750 | 28-Jul-81 | | | |
| | | | | U31, U23, U12 | | | | | | | | | | | | | |
| 016 | 8 | 351-3127 | A | TRANSISTOR,ARRAY NPN HIGH FREQ. | RP | P | 1 | | C | P | EA | 1 | 750 | 28-Jul-81 | | | |
| | | | | U7 | | | | | | | | | | | | | |
| 023 | 8 | 351-6700 | A | IC, TRANS. ARRAY QUAD COMP. PAIRS | RI | P | 1 | | C | P | EA | 2 | 750 | 28-Jul-81 | | | |
| | | | | U1, U24 | | | | | | | | | | | | | |
| | | | | ITEM 100-103 ALT P/N | | | | | | | | | | | | | |
| 058 | 8 | 353-0005 | A | IC REG. +5V 100MA TO 92, 3 TERMNL | RI | P | 1 | | C | P | EA | 1 | 792 | 28-Jul-81 | | | |
| | | | | RG1 | | | | | | | | | | | | | |
| 018 | 8 | 353-0319 | A | IC, HIGH SPEED DUAL COMPARATOR | RI | P | 1 | | C | P | EA | 1 | 750 | 28-Jul-81 | | | |
| | | | | U13 | | | | | | | | | | | | | |
| 017 | 8 | 353-0353 | A | DUAL FET OP AMP/BUFFER | RP | P | 1 | | C | P | EA | 2 | 750 | 28-Jul-81 | | | |
| | | | | U25,U8 | | | | | | | | | | | | | |
| 015 | 8 | 353-0592 | A | IC, VIDEO AMPLIFIER | RI | P | 1 | | C | P | EA | 1 | 750 | 28-Jul-81 | | | |
| | | | | U6 | | | | | | | | | | | | | |
| 024 | 8 | 371-4152 | 1A | DIODE FAST SWITCH 1N4152 500mW 30 | RP | P | 1 | | C | P | EA | 23 | C538 | 28-Jul-81 | | | |
| | | | | CR1-14, CR16-21, | | | | | | | | | | | | | |
| | | | | CR23-24, CR26 | | | | | | | | | | | | | |
| 100 | 8 | 372-2222 | 1A | TRANS,NPN,SWITCHING AND AMP 2N222 | | * | * | | * | * | EA | 0 | C403 | 08-Jul-83 | | | |
| | | | | ALT P/N FOR ITEM 23 | | | | | | | | | | | | | |
| | | | | U1-QTY 2 | | | | | | | | | | | | | |
| 101 | [illegible] | [illegible] | A | [illegible]2N2907, PNP SWITCH & AMPLIFI | | * | * | | * | * | EA | 0 | [illegible] | [illegible]-Jul-83 | | | |
| | | | | ALT P/N FOR ITEM 23 | | | | | | | | | | | | | |
| | | | | U1-QTY 2 | | | | | | | | | | | | | |
| [illegible] | [illegible] | [illegible] | A | TRANSISTOR,NPN SW.&AMP. 2N3904 | RP | P | 1 | P | C | I | EA | [illegible] | [illegible] | [illegible]-Jul-83 | | | |

EFFECTIVITY DATE: ALL

INDENTED BILLS OF MATERIAL

PARENT PART: A9M1005 — PG, PROFILE 'GENERIC' DRIVE - EURO — UM: EA — PROD CODE: DM — ECN: P354 — ASSEMBLY QTY: 1
ERC: A — SRCE CODE: G — TYPE: 1 — ABC: * — PLAN CODE: P — DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION / REMARKS | PR CD | S C T Y S P A B P L | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | ALT P/N FOR ITEM 23 | | | | | | | | | |
| | | | | U24-QTY 2 | | | | | | | | | |
| 103 | 8 | 372-3906 | 1B | TRANSISTOR,PNP SW.&AMP. 2N3906 | RP | P 1 P C P | EA | 0 | C768 | 08-Jul-83 | | | |
| | | | | ALT P/N FOR ITEM 23 | | | | | | | | | |
| | | | | U24-QTY 2 | | | | | | | | | |
| 026 | 8 | 375-0010 | 1A | DIODE REFERENCE 10mA 1.2V | RP | P 1 C P | EA | 1 | C538 | 28-Jul-81 | | | |
| | | | | CR15 | | | | | | | | | |
| 019 | 8 | 375-0012 | 1A | DIODE DUAL VOLT VAR CAP 200mA 32V | RP | P 1 * P | EA | 1 | C538 | 28-Jul-81 | | | |
| | | | | Q2 | | | | | | | | | |
| 020 | 8 | 376-0016 | A | FET, N-CHANNEL VOLT CONTRL RESIS. | RP | P 1 * P | EA | 1 | C303 | 28-Jul-81 | | | |
| | | | | Q1 | | | | | | | | | |
| 090 | 8 | 511-0801 | C | SOCKET, IC 8 PIN | RP | P 1 P C P | EA | 3 | 799 | 28-Jul-81 | | 14-Apr-83 | |
| 091 | 8 | 511-1401 | C | SOCKET, IC 14 PIN | RP | P 1 P C P | EA | 12 | 799 | 28-Jul-81 | | 14-Apr-83 | |
| 092 | 8 | 511-1601 | C | SOCKET, IC 16 PIN | RP | P 1 P C P | EA | 17 | 799 | 28-Jul-81 | | 14-Apr-83 | |
| 093 | 8 | 511-2001 | C | SOCKET, IC 20 PIN | RP | P 1 P C P | EA | 1 | 799 | 28-Jul-81 | | 14-Apr-83 | |
| 089 | 8 | 515-0005 | 1B | CONN,PIN,SINGLE | RP | P 1 P C P | EA | 15 | C781 | 28-Jul-81 | | | |
| 087 | 8 | 515-0120 | 1A | CONN,HDR,SGL ROW,4P | RP | P 1 * P | EA | 1 | C781 | 28-Jul-81 | | 02-Mar-82 | |
| 085 | 8 | 515-0130 | 1B | CONN,HDR,RT ANG,DBL ROW,8/16P | RP | P 1 * P | EA | 1 | C781 | 28-Jul-81 | | | |
| | | | | J5 | | | | | | | | | |
| 088 | 8 | 515-0131 | 1B | CONN,HDR,RT ANG,DBL ROW,17/34P | RP | P 1 C P | EA | 1 | C781 | 01-Mar-82 | | 28-Aug-83 | |
| | | | | J2 | | | | | | | | | |
| 086 | 8 | 515-0140 | 1A | CONN,HDR,RT ANG,5P,W/LKG RAMP | RP | P 1 * P | EA | 3 | C781 | 28-Jul-81 | | | |
| | | | | J6-8 | | | | | | | | | |
| 105 | 8 | 515-0380 | 1A | CONN,HDR,RT ANG,DBL ROW,17/34P | | * * * * | EA | 1 | C781 | 29-Aug-83 | | | |
| | | | | J2 | | | | | | | | | |
| 104 | 8 | 550-0101 | 1C | TUBING, HEAT SHRINK 1/4 ID BLACK | EX | X 7 P C P | FT | 0 | C503 | 08-Jul-83 | | | |
| | | | | USE W/ALT P/N | | | | | | | | | |
| | | | | 100-101 ON U1 | | | | | | | | | |
| 095 | 8 | 820-0054 | AE | PCB, ANALOG PROFILE | RP | P 1 * P | EA | 1 | P214 | 01-Mar-82 | | | |
| 001 | 6 | 699-0054 | A | ASSY, O.E.M. HEAD DISC (H.D.A.) | VX | A 1 P A P | EA | 1 | 600 | 14-Dec-82 | | | |
| 005 | 4 | 699-5011 | 1B | PURCH ASSY,COATD TOP CVR,PRFLE-B | | * * * * | EA | 1 | L051 | 12-Dec-83 | | 05-Jan-84 | |
| 001 | 5 | 815-5007 | 1C | COVER, TOP, PROFILE | RM | P 1 * P | EA | 1 | P408 | 12-Dec-83 | | | |
| 006 | 4 | 810-0090 | 1A | DRESS PANEL, DRIVE, PROFILE | RM | P 1 * P | EA | 1 | P567 | 12-Dec-83 | | | |
| 007 | 4 | 810-0091 | 1B | DRESS PANEL, PWR SPLY PROFILE | RM | P 1 * P | EA | 1 | P644 | 12-Dec-83 | | | |
| 012 | 4 | 825-0207 | B | LABEL, FCC NON COMPLIANCE APPLE 3 | EX | X 7 P C P | EA | 1 | P593 | 12-Dec-83 | | 05-Jan-84 | |
| 014 | 4 | 835-0172 | 1A | NUT, U TYPE .017 THK | | * * * * | EA | 1 | C678 | 12-Dec-83 | | | |
| 009 | 5 | 430-1012 | 1C | SCR TAP 6-32X.312 PN CRS REC STL | | X * * P | EA | 4 | C540 | 23-May-83 | | | |
| 021 | 3 | 825-0113 | 1B | LABEL,CAUTION PROFILE/DUOFILE | EX | P 7 * P | EA | 1 | P461 | 15-Mar-83 | | | |
| 011 | 3 | 825-0121 | 1B | LABEL, PROFILE MODEL & SERIAL EUR | EX | P 7 * P | EA | 1 | P648 | 15-Mar-83 | | | |
| 008 | 3 | 825-0122 | C | LABEL, INDIV. CARTON PROFILE EURO | EX | P 7 * P | EA | 1 | P284 | 15-Mar-83 | | | |
| 026 | 3 | 825-0311 | 1B | LABEL, LOGO 16MM BY 16MM | EX | X 7 P C P | EA | 1 | P514 | 15-Mar-83 | | | |
| 027 | 3 | 825-0313 | 1B | LABEL, NAMEPLATE, PROFILE | EX | P 7 * P | EA | 1 | P514 | 15-Mar-83 | | | |
| 028 | 3 | 825-0315 | 1C | LABEL, LED PROFILE | EX | P 7 * P | EA | 1 | P514 | 15-Mar-83 | | | |
| 010 | 3 | 825-0317 | A | LABEL, FRAGILE, PROFILE | EX | P 7 * P | EA | 4 | P112 | 01-Jun-83 | | | |
| 0[illegible] | 3 | 825-0325 | A | LABEL, 230 VAC, 0.6 AMP | EX | P 7 * P | EA | 1 | P124 | 15-Mar-83 | | | |
| 011 | 2 | 825-0328 | A | LABEL, DO NOT REMOVE END CAPS | EX | P 7 * P | EA | 2 | P125 | 15-Mar-83 | | | |
| [illegible] | 3 | 825-[illegible] | A | LABEL, SERIAL NUMBER | EX | P 7 * P | EA | 0.[illegible] | P124 | 15-Mar-83 | | | |
| [illegible] | 3 | [illegible]-0050 | B | ANGLE BOARD, PALLETIZING, 2X2X36 | EX | X 7 S C U | EA | 0.3[illegible] | M584 | 15-Mar-83 | | | |
| 01[illegible] | 3 | [illegible]-0051 | B | SEAL, STRAPPING, 50 BY | EX | X 7 S C P | EA | 0.[illegible] | M[illegible] | 15-Mar-83 | | | |
| [illegible] | 3 | [illegible]-005[illegible] | [illegible] | [illegible], STRAPPING, CONTRAX 816 | EX | X 7 S A P | EA | [illegible] | [illegible] | [illegible] | | | |

EFFECTIVITY DATE: AL[illegible]

I N D E N T E D B I L L S O F M A T E R I A L

PARENT PART: A9M1005 FG, PROFILE 'GENERIC' DRIVE - EURO UM: EA PROD CODE: DH FNCN: F354 ASSEMBLY QTY: 1
ERC: A SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | R E | PART DESCRIPTION REMARKS | FR CD | S C | T Y | S P | A R | P L | UM | EXTENDED QTY PER | ECN CHG / STAPT DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 020 | 3 | 918 0071 | B | PALLET, 48 X 40 2 WAY ENTRY | EX | P | 7 | | R | P | EA | 0.1670 | M72515-Mar 83 | | | |
| 016 | 3 | 919-0012 | A | LABEL, MODEL TYPE 'EURO STD' | | * | * | | * | * | EA | 1.3300 | P33015-Mar-83 | | | |
| | | | | RUBBER STAMP OR PEN | | | | | | | | | | | | |
| 012 | 3 | 942-0117 | 1C | BOX, 29.5 X 21.25 X 16.13, PROFIL | EX | X | 7 | | C | P | EA | 1 | P39915-Mar-83 | | 06-Jul-83 | |
| 022 | 3 | 942-0142 | A | BOX, OFF 19.25 X 10.75 X 6.88 | EX | P | 7 | | * | P | EA | 1 | P12515-Mar-83 | | 06-Jul-83 | |
| 025 | 3 | 944-0091 | 1A | CUSHION BLOCK, EPS, PROFILE | | * | * | | * | * | EA | 1 | P35415-Mar-83 | | 06-Jul-83 | |
| | | | | (TO REPLACE ACC KIT) | | | | | | | | | | | | |
| 009 | 3 | 946-0003 | B | TAPE, P.S. 2 inch X 60 yard | EX | X | 7 | P | C | P | RL | 0 | C06415-Mar-83 | | | |
| | | | | ALT FOR ITEM 24 | | | | | | | | | | | | |
| | | | | ALT QTY .0150 | | | | | | | | | | | | |
| 024 | 3 | 946-0010 | A | TAPE,SEALING GLASS WEB #341 | EX | X | 7 | | R | P | RL | 0.0100 | 883 15-Mar-83 | | | |
| 023 | 3 | 946-0011 | A | TAPE,PRESSURE SENSITIVE 2 INCH,AU | EX | X | 7 | | * | P | RL | 0 | C04915-Mar-83 | | | |
| | | | | ALT FOR ITEM 24 | | | | | | | | | | | | |
| | | | | ALT QTY .0009 | | | | | | | | | | | | |
| 007 | 3 | 946-0012 | 1C | STRAPPING, POLYPRO 1/2 INCH | EX | X | 7 | | * | P | RI | 0.0010 | P72215-Mar-83 | | | |

EFFECTIVITY DATE: ALL

I N D E N T E D B I L L S O F M A T E R I A L

PARENT PART: A3M0305 3 PROFILE FOR APPLE /// UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
ERC: B SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15 Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | F F | PART DESCRIPTION / REMARKS | FR CD | S C | T Y | S P | A B | P L | UM | EXTENDED QTY PER | ECN CHG | START DATE | START S/N | CLOSE DATE | CLOSE S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | 2 | 656-8101 | D | INACTIVE-FG, PROFILE FOR A3 | DH | G | 1 | | A | P | EA | 1 | P33031 | -Aug-81 | | 13-Dec-82 | |
| 017 | 3 | 600-0124 | A | INACTIVE,ASSY FOAM/CORR END PROFI | EX | P | 7 | | * | P | EA | 2 | P12531 | -Aug-81 | | 16-Oct-81 | |
| 018 | 3 | 600-0125 | A | INACTIVE,ASSY FOAM/CORR PROFILE | EX | P | 7 | | * | P | EA | 1 | P12531 | -Aug-81 | | 16-Oct-81 | |
| 005 | 3 | 600-2513 | A | (INACTIVE)ASSY, BOTTOM PAD, PROFI | WS | A | 1 | | * | P | EA | 1 | P26519 | -Oct-81 | | 01-Dec-82 | |
| 006 | 3 | 600-2514 | A | (INACTIVE)ASSY, TOP PAD, PROFILE | WS | A | 1 | | * | P | EA | 1 | P26519 | -Oct-81 | | 01-Dec-82 | |
| 004 | 3 | 600-2515 | A | ASSY, END PAD | WS | A | 1 | | * | P | EA | 2 | P12519 | -Oct-81 | | 13-Dec-82 | |
| 014 | 3 | 600-2516 | B | ASSY, END CAP, PROFILE | WS | A | 1 | | * | P | EA | 2 | P56819 | -Oct-81 | | 13-Dec-82 | |
| 021 | 3 | 600-2517 | A | ASSY., TOP/BOTTOM PAD, PROFILE | | * | * | | * | * | EA | 2 | P26502 | -Dec-82 | | 13-Dec-82 | |
| 002 | 3 | 656-5103 | C | INACTIVE-SBSY ACC PAC FG | WS | A | 1 | | * | P | EA | 1 | P33031 | -Aug-81 | | 13-Dec-82 | |
| 009 | 4 | 030-0158 | AB | FORM, USER INPUT REPORT A3 | EX | X | 7 | P | C | P | EA | 1 | A18631 | -Aug-81 | | 13-Dec-82 | |
| 010 | 4 | 030-0183 | 1E | REGIS. CARD, PERIPH. & SOFTWARE | EX | X | 7 | P | C | P | EA | 1 | A92731 | -Aug-81 | | 13-Dec-82 | |
| 011 | 4 | 030-0272 | 1C | MANUAL, USER'S, PROFILE FOR A3 | EX | P | 7 | | C | P | EA | 1 | P63431 | -Aug-81 | | 13-Dec-82 | |
| 007 | 4 | 030-0273 | 1D | UNPACKING INSTRUCTIONS, PROFILE | EX | X | 7 | | C | P | EA | 1 | P72931 | -Aug-81 | | 13-Dec-82 | |
| 008 | 4 | 030-0294 | B | PACKING LIST, PROFILE | EX | X | 7 | | * | P | EA | 1 | P31731 | -Aug-81 | | 13-Dec-82 | |
| 018 | 4 | 031-0017 | A | NOTICE, PROFILE | EX | P | 7 | | * | P | EA | 1 | P13811 | -Feb-81 | | 13-Dec-82 | |
| 020 | 4 | 031-0241 | C | PROFILE HELPFUL HINTS | EX | X | 7 | | * | P | EA | 1 | P17701 | -Mar-82 | | 13-Dec-82 | |
| 004 | 4 | 590-0003 | 1D | CABLE, A.C. POWER CORD | 2H | P | 1 | P | C | P | EA | 1 | A86231 | -Aug-81 | | 13-Dec-82 | |
| 003 | 4 | 590-0046 | 1B | CABLE, ASSY, I/O PROFILE | RC | P | 1 | | * | P | EA | 1 | P60331 | -Aug-81 | | 13-Dec-82 | |
| 001 | 5 | 519-0110 | 1A | CONN,"D",IDC,25P,W/O SR | RP | P | 1 | | * | U | EA | 2 | C78131 | -Aug-81 | | | |
| 002 | 5 | 569-0203 | 1B | CABLE, FLAT 25 CONDUCTOR | | * | * | | * | * | FT | 3.2500 | C52301 | -Oct-83 | | | |
| 003 | 5 | 590-0052 | 3A | REIDENTIFY SEE 569-0203 | RC | P | 1 | | * | P | FT | 3.2500 | C52331 | -Aug-81 | | 30-Sep-83 | |
| 002 | 4 | 656-4103 | A | ASSY, PCB TSTD, I/O PROFILE A3 | WT | A | 1 | | * | P | EA | 1 | P11331 | -Aug-81 | | 13-Dec-82 | |
| 001 | 5 | 656-0103 | 1F | ASSY, PCB UNTSTD, I/O PROFILE, A3 | WU | A | 1 | | * | P | EA | 1 | P78131 | -Aug-81 | | | |
| 000 | 6 | 050-5007 | 1B | SCHEMATIC, I/O CARD, PROFILE | D | D | 7 | | * | U | EA | 1 | P65104 | -Jan-82 | | | |
| 015 | 6 | 101-4103 | 1A | RES 10K OHM 1/4W 5% R4,5,7 | RP | P | 1 | P | C | P | EA | 3 | C67531 | -Jul-81 | | | |
| 014 | 6 | 101-4332 | 1A | RES 3.3K OHM 1/4W 5% R1,3,6 | RP | P | 1 | P | C | P | EA | 3 | C67531 | -Jul-81 | | | |
| 029 | 6 | 101-4751 | 1A | RES 750 OHM 1/4W 5% R2 | RP | P | 1 | | C | P | EA | 1 | C67513 | -Nov-81 | | | |
| 034 | 6 | 112-0102 | 1B | RES ARRAY 8 X 47 OHM 10% | RP | P | 1 | P | C | P | EA | 2 | C67531 | -Aug-81 | | 12-Nov-81 | |
| 021 | 6 | 112-0104 | 1B | RES ARRAY 7 X 470 OHM 5% B1 | RP | P | 1 | | * | P | EA | 1 | C67531 | -Jul-81 | | | |
| 013 | 6 | 112-0105 | 1D | RES ARRAY 8 X 330 OHM A7,B7 | RP | P | 1 | | * | P | EA | 2 | C67513 | -Nov-81 | | 06-Nov-83 | |
| 036 | 6 | 112-0107 | 1B | RES ARRAY 8 X 100 OHM. A7,B7 | | * | * | | * | * | EA | 2 | C67507 | -Nov-83 | | | |
| 035 | 6 | 130-0003 | 1D | CAP CER AXIAL .1 UF +80%-20% 25V | RP | P | 1 | P | C | P | EA | 17 | C93913 | -Nov-81 | | 17-May-82 | |
| 016 | 6 | 130-0007 | 1B | CAP CER AXIAL .1 UF +80%-20% 25V C1-C17 | RP | P | 1 | | C | P | EA | 17 | C93918 | -May-82 | | | |
| 032 | 6 | 132-6101 | 1A | CAP CER 100 pF 20% 50V C18 | RP | P | 1 | P | C | P | EA | 1 | C54113 | -Nov-81 | | | |
| 031 | 6 | 159-0009 | A | BEAD, FERRITE L1 | RP | P | 1 | P | C | P | EA | 1 | DC6213 | -Nov-81 | | | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] P7 | RP | P | 1 | P | C | P | EA | 1 | [illegible] | -Nov-81 | | | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] U14 USE P/N FOR ITEM 7 | RP | P | 1 | P | C | P | EA | 0 | [illegible] | -Jul-81 | | | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | RP | P | 1 | P | C | P | EA | 1 | [illegible] | [illegible] | | | |

EFFECTIVITY DATE: ALL

INDENTED BILL OF MATERIAL

PARENT PART: A3M0305 3 PROFILE FOR APPLE /// UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
ERC: B SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION / REMARKS | PR CD C Y P R I UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C3 | | | | | | | |
| | | | | SUB P/N 301-0259 | | | | | | | |
| | | | | ITEM 28 | | | | | | | |
| 004 | 6 | 305-0010 | A | IC, 74LS10 | RI P 1 P B P EA | 1 | 442 | 31-Jul-81 | | | |
| | | | | C8 | | | | | | | |
| 002 | 6 | 305-0014 | A | IC, 74LS14 | RI P 1 P B P EA | 2 | 442 | 31-Jul-81 | | | |
| | | | | A2,B4 | | | | | | | |
| 033 | 6 | 305-0038 | A | IC, 74LS38 QUAD 2 INPUT BUFFER | RI P 1 P B P EA | 1 | 649 | 31-Aug-81 | | 12-Nov-81 | |
| 012 | 6 | 305-0109 | A | IC, 74LS109 | RI P 1 P B P EA | 1 | 442 | 31-Jul-81 | | | |
| | | | | B5 | | | | | | | |
| 005 | 6 | 305-0125 | A | IC, 74LS125 | RI P 1 P B P EA | 1 | 442 | 31-Jul-81 | | | |
| | | | | C4 | | | | | | | |
| 001 | 6 | 305-0132 | A | IC, 74LS132 | RI P 1 P B P EA | 1 | 442 | 31-Jul-81 | | | |
| | | | | A3 | | | | | | | |
| 006 | 6 | 305-0138 | A | IC, 74LS138 | RI P 1 P B P EA | 1 | 442 | 31-Jul-81 | | | |
| | | | | C2 | | | | | | | |
| 009 | 6 | 305-0244 | A | IC, 74LS244 | RI P 1 P B P EA | 1 | 442 | 31-Jul-81 | | | |
| | | | | A5 | | | | | | | |
| 010 | 6 | 305-0280 | A | IC, 74LS280 9-BIT PARITY | RI P 1 P B P EA | 1 | 649 | 31-Jul-81 | | | |
| | | | | A4 | | | | | | | |
| 011 | 6 | 305-0368 | A | IC, 74LS368 | RI P 1 P B P EA | 1 | 442 | 31-Jul-81 | | | |
| | | | | B6 | | | | | | | |
| 008 | 6 | 305-0374 | A | IC, 74LS374 | RI P 1 P B P EA | 1 | 442 | 31-Jul-81 | | | |
| | | | | A6 | | | | | | | |
| 026 | 6 | 400-1406 | 1C | SCR 4-40X3/8 PN HD CRS REC STL ZN | EX X 7 P C P EA | 2 | C540 | 31-Jul-81 | | | |
| 022 | 6 | 511-1401 | C | SOCKET, IC 14 PIN | RP P 1 P C P EA | 8 | 799 | 31-Jul-81 | | | |
| 023 | 6 | 511-1601 | C | SOCKET, IC 16 PIN | RP P 1 P C P EA | 6 | 799 | 31-Jul-81 | | | |
| 024 | 6 | 511-2001 | C | SOCKET, IC 20 PIN | RP P 1 P C P EA | 2 | 799 | 31-Jul-81 | | | |
| 025 | 6 | 515-0005 | 1B | CONN,PIN,SINGLE | RP P 1 P C P EA | 2 | C781 | 31-Jul-81 | | | |
| | | | | TP1,TP2 | | | | | | | |
| 030 | 6 | 519-0100 | 1B | CONN,PC TAIL,90 DEG,MET.LNG FTPRI | RP P 1 * P EA | 1 | C781 | 13-Nov-81 | | | |
| | | | | P1 | | | | | | | |
| 018 | 6 | 520-0011 | 1A | CONN,PLUG,CONTACT KEY,'D' SUB | RP P 1 C P EA | 1 | C781 | 31-Jul-81 | | | |
| | | | | P1 | | | | | | | |
| 020 | 6 | 820-0056 | AC | PCB I/O, PROFILE, FOR A3 | RM P 1 * P EA | 1 | P135 | 31-Jul-81 | | | |
| 027 | 6 | 835-0150 | A | NUT/WASHER ASSY, (KERS) 4-40 | EX P 7 * P EA | 2 | 834 | 31-Jul-81 | | | |
| 005 | 4 | 681-0022 | 1E | DISKETTE ASSY, A3 PROFILE DRIVER | WS A 1 C P EA | 1 | L273 | 02-Nov-81 | | 13-Dec-82 | |
| 001 | 5 | 004-0039 | 1 | DISKETTE, BLANK, WRITE PROTECTED | RD P 1 P C P EA | 1 | 332 | 31-Aug-81 | | | |
| 002 | 5 | 026-1010 | 1E | LABEL, DISKWARE, A3 PROFILE DRIVE | EX X 7 * P EA | 1 | L151 | 31-Aug-81 | | | |
| 000 | 5 | 681-0001 | C | DISKETTE ASSY, SYSTEM UTILITIES | RO A 1 P C P EA | 0 | 995 | 01-Mar-82 | | | |
| 004 | 6 | 000-0000 | 1A | NOT USED THIS ASSEMBLY | D * P D P EA | 0 | NONE | | | | |
| 001 | 6 | 004-0039 | 1 | DISKETTE, BLANK, WRITE PROTECTED | RD P 1 P C P EA | 0 | 332 | 29-Jan-81 | | | |
| 002 | 6 | 026-1002 | C | LABEL, DISKWARE SYSTEM UTILITIES | EX X 7 P C P EA | 0 | 995 | 29-Jan-81 | | | |
| 000 | 6 | 681-0001D | C | DWG, DISKWARE ASSY APPLE 3 | FX D 7 * U EA | 0 | 995 | | | | |
| [illegible] | 6 | [illegible] | B | ENVELOPE, DISKETTE APPLE 3 | EX X 7 P C P EA | 0 | 568 | 29-Jan-81 | | | |
| [illegible] | [illegible] | [illegible] | B | ENVELOPE, DISKETTE APPLE 3 | FX X 7 P C P EA | 1 | [illegible] | 31-Aug-81 | | | |
| [illegible] | [illegible] | [illegible] | 1B | DISKETTE ASSY, A3 PROFILE 'DEMO' | WS A 1 C P EA | 1 | [illegible] | [illegible]-Nov-81 | | 13-Dec-82 | |
| [illegible] | [illegible] | [illegible] | 1 | DISKETTE, BLANK, WRITE PROTECTED | RD P 1 P C P EA | 1 | 332 | 17-Oct-81 | | | |
| [illegible] | [illegible] | [illegible] | 1B | LABEL, DISKWARE, A3, PROFILE DEMO | EX X 7 * P EA | 1 | [illegible] | [illegible] | | | |
| [illegible] | [illegible] | [illegible] | [illegible] | DISKETTE ASSY, SYSTEM UTILITIES | RD A 1 P C P EA | [illegible] | [illegible] | [illegible] | | | |

EFFECTIVITY DATE: ALL

INDENTED BILLS OF MATERIAL

PARENT PART: A3M0305 3 PROFILE FOR APPLE /// UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
ERC: B SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | I E | PART DESCRIPTION REMARKS | PR CD | S C / I Y / S P / A R / F I | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 004 | 6 | 000-0000 | 1A | NOT USED THIS ASSEMBLY | | D * P D P | EA | 0 | NONE | | | | |
| 001 | 6 | 004-0039 | 1 | DISKETTE, BLANK, WRITE PROTECTED | RD | P 1 P C P | EA | 0 | 332 | 29-Jan-81 | | | |
| 002 | 6 | 026-1002 | C | LABEL, DISKWARE SYSTEM UTILITIES | EX | X 7 P C P | EA | 0 | 995 | 29-Jan-81 | | | |
| 000 | 6 | 681-0001D | C | DWG, DISKWARE ASSY APPLE 3 | EX | D 7 * U | EA | 0 | 995 | | | | |
| 003 | 6 | 914-0019 | B | ENVELOPE, DISKETTE APPLE 3 | EX | X 7 P C P | EA | 0 | 568 | 29-Jan-81 | | | |
| 003 | 5 | 914-0019 | B | ENVELOPE, DISKETTE APPLE 3 | EX | X 7 P C P | EA | 1 | 568 | 19-Oct-81 | | | |
| 017 | 4 | 825-0326 | MA | LABEL, OPEN ME FIRST - PROFILE | EX | P 7 * P | EA | 1 | P124 | 02-Nov-81 | | 13-Dec-82 | |
| 016 | 4 | 825-0327 | 1B | LABEL, ACC PAC PROFILE FOR A3 | EX | P 7 * P | EA | 1 | P639 | 02-Nov-81 | | 13-Dec-82 | |
| 019 | 4 | 825-0329 | A | LABEL, SERIAL NUMBER | EX | P 7 * P | EA | 0.2000 | P124 | 01-Mar-82 | | 13-Dec-82 | |
| 013 | 4 | 942-0042 | B | BAG, PLASTIC 8" X 12" | EX | X 1 P C P | EA | 2 | C137 | 31-Aug-81 | | 13-Dec-82 | |
| 001 | 4 | 942-0114 | A | BOX, ONE PIECE FOLDER | EX | X 7 * P | EA | 1 | P113 | 31-Aug-81 | | 13-Dec-82 | |
| 012 | 4 | 942-0115 | A | BAG, BUBBLE 8 X 6 | EX | X 7 C P | EA | 1 | P113 | 31-Aug-81 | | 13-Dec-82 | |
| 014 | 4 | 946-0003 | B | TAPE, P.S. 2 inch X 60 yard | EX | X 7 P C P | RL | 0.0120 | C064 | 31-Aug-81 | | 13-Dec-82 | |
| 015 | 4 | 946-0006 | 0 | TAPE, MASKING PERMACEL #P-786 3/4 | EX | X 7 P C P | RL | 0.0030 | 131 | 31-Aug-81 | | 13-Dec-82 | |
| 001 | 3 | 656-6101 | AJ | INACTIVE-CHASSIS ASY, A/// | WS | A 1 * P | EA | 1 | P330 | 31-Aug-81 | | 13-Dec-82 | |
| 033 | 4 | 341-0080 | B | PROG PROM 2K PROFILE CONTROLLER | RL | P 1 * P | EA | 1 | P184 | 05-May-82 | | 14-Oct-82 | |
| 039 | 4 | 341-0171 | A | MICROPRCSR-2K PROG ROM FORR PROFI | | * * * * | EA | 1 | P266 | 15-Oct-82 | | 13-Dec-82 | |
| 022 | 4 | 400-1603 | 1C | SCR 6-32X3/16 PN HD CRS REC STL Z | EX | P 7 * P | EA | 1 | C540 | 01-Jul-82 | | 13-Dec-82 | |
| 021 | 4 | 400-1604 | 1C | SCR 6-32X1/4 PN HD CRS REC STL ZN | EX | X 7 C P | EA | 10 | C540 | 01-Jul-82 | | 13-Dec-82 | |
| 025 | 4 | 400-1606 | 1C | SCR 6-32X3/8 PN HD CRS REC STL ZN | EX | X 1 P C P | EA | 4 | C540 | 01-Jul-82 | | 13-Dec-82 | |
| 024 | 4 | 400-1608 | 1C | SCR 6-32X1/2 PN HD CRS REC STL ZN | EX | X 7 C P | EA | 5 | C540 | 01-Jul-82 | | 13-Dec-82 | |
| 036 | 4 | 400-5603 | B | SCREW-BINDER HD PHILLIP 6-32 X 3/ | EX | X 7 * P | EA | 0 | C123 | | | 30-Jun-82 | |
| 035 | 4 | 400-5604 | B | INACTIVE,SCREW,CRS RES BND 6-32X1 | EX | X 7 P C P | EA | 0 | C123 | | | 30-Jun-82 | |
| 037 | 4 | 400-5608 | B | SCREW-BND HD PHL,6-32 X 1/2 | EX | X 7 C P | EA | 0 | C123 | | | 30-Jun-82 | |
| 038 | 4 | 403-5606 | 1C | SCR 6-32X3/8 BND HD PHL BL ZINC | EX | X 7 * P | 4 | 0 | C540 | | | 30-Jun-82 | |
| 014 | 4 | 430-1001 | 1C | SCR TAP 8-18X.437 PN CRS STL ZN | EX | X 7 P C P | EA | 3 | C540 | 31-Aug-81 | | 13-Dec-82 | |
| 026 | 4 | 430-1006 | 1C | SCR TAP 4-20X.250 PN CRS REC STL | EX | X 7 * P | EA | 1 | C540 | 31-Aug-81 | | 13-Dec-82 | |
| 011 | 4 | 590-0047 | 1B | CABLE, ASSY, LED, PROFILE | RC | P 1 * P | EA | 1 | P464 | 31-Aug-81 | | 13-Dec-82 | |
| 008 | 5 | 517-0041 | 1A | CONN,RCPT,INSUL. DISPL.,2P | RP | P 1 * U | EA | 1 | C781 | 31-Aug-81 | | | |
| 003 | 5 | 550-0010 | A | TUBING, BRAIDED, 1/8 DIA. | EX | X 7 * U | IN | 24.5000 | P109 | 31-Aug-81 | | | |
| 007 | 5 | 550-0101 | 1C | TUBING, HEAT SHRINK 1/4 ID BLACK | EX | X 7 P C P | FT | 2 | C503 | 31-Aug-81 | | | |
| 006 | 5 | 550-0103 | 1C | TUBING, HEAT SHRINK 1/16 ID BLACK | EX | X 7 P C P | FT | 1 | C503 | 31-Aug-81 | | | |
| 004 | 5 | 561-2600 | B | WIRE, BLACK 26 AWG, 7 X 34 | EX | X 7 P * P | FT | 25 | 764 | 31-Aug-81 | | | |
| 005 | 5 | 561-2622 | B | WIRE, 26 AWG STRAND. RED | EX | X 7 * U | FT | 25 | C018 | 31-Aug-81 | | | |
| 001 | 5 | 710-0004 | MA | LED, RED APPLE III DISKCABLE | RP | X 1 P C P | EA | 1 | 552 | 31-Aug-81 | | | |
| 002 | 5 | 815-0190 | 0 | GROMET, PANEL MTG. FOR RECT. LAMP | RM | X 1 P C P | EA | 0 | 442 | 31-Aug-81 | | 26-Apr-83 | |
| 010 | 4 | 590-0048 | 1B | CABLE, ASSY, CNTRLR TO ANALOG PCB | RC | P 1 * P | EA | 1 | P603 | 31-Aug-81 | | 13-Dec-82 | |
| 001 | 5 | 513-0020 | 1B | CONN,CD EDG,IDC,17/34P,W/O EAR | RF | P 1 * U | EA | 1 | C781 | 31-Aug-81 | | | |
| 002 | 5 | 517-0035 | 1B | CONN,SKT,INSUL. DISPL.,17/34P | RP | P 1 C U | EA | 1 | C781 | 31-Aug-81 | | | |
| 003 | 5 | 569-0204 | 1B | CABLE, FLAT 34 CONDUCTOR | | * * * * | FT | 3.6200 | C523 | 01-Oct-83 | | | |
| 004 | 5 | 590-0053 | 3A | REIDENTIFY SEE 569-0204 | RC | P 1 * P | FT | 3.6200 | C523 | | | 30-Sep-83 | |
| 003 | 4 | 656-4102 | MC | ASSY, PCB TSTD, CONTROLLER | WT | A 1 * P | EA | 1 | P266 | 31-Aug-81 | | 13-Dec-82 | |
| 002 | 5 | 337-8603 | B | IC SOCKET MICROPRO. W/24P PIGGYBA U25 | RL | P 1 * P | EA | 1 | C148 | 05-May-82 | | 14-Oct-82 | |
| 001 | 5 | 650-0102 | 1B | ASSY,PCB,UNTSTD,CONTROLLER,PROFIL | WU | A 1 * P | EA | 1 | P651 | 31-Aug-81 | | | |
| 000 | 6 | 050-5006 | 11 | SCHEMATIC, CONTROLLER BD, PROFILE | D | D 7 * U | EA | 0 | P651 | 04-Jan-8[illegible] | | | |
| [illegible] | 6 | [illegible]-41[illegible] | 1A | RES [illegible] OHM 1/4W 5% R20,R21 | RP | P 1 P C P | EA | 2 | [illegible] | 31-Aug-81 | | | |
| [illegible] | 6 | [illegible]-41[illegible] | 1A | RES [illegible] OHM 1/4W 5% [illegible] | RP | P 1 P C P | EA | 1 | [illegible] | [illegible]-Aug-81 | | 14-Oct-83 | |

EFFECTIVITY DATE: ALL

I N D E N T E D B I L L S O F M A T E R I A L

PARENT PART: A3M0305 3 PROFILE FOR APPLE /// UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
ERC: B SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | I R | PART DESCRIPTION / REMARKS | PR CD | S C | I Y | S P | A B | P L | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 016 | 6 | 101-4103 | 1A | RES 10K OHM 1/4W 5%<br>R19 | RP | P | 1 | P | C | P | EA | 1 | C67531-Aug-81 | | | | |
| 036 | 6 | 101-4152 | 1A | RES 1.5K OHM 1/4W 5%<br>R9,R10 | RP | P | 1 | P | C | P | EA | 2 | C67531-Aug-81 | | | | |
| 040 | 6 | 101-4201 | 1A | RES 200 OHM 1/4W 5%<br>R17 | RP | P | 1 | P | C | P | EA | 1 | C67531-Aug-81 | | | | |
| 042 | 6 | 101-4303 | 1A | RES 30K OHM 1/4W 5%<br>R1,R2,R4,R5 | RP | P | 1 | P | C | P | EA | 4 | C67525-Mar-83 | | | | |
| 037 | 6 | 101 4332 | 1A | RES 3.3K OHM 1/4W 5%<br>R3,R6,R7,R8,<br>R11,R12,R13,R18 | RP | P | 1 | P | C | P | EA | 8 | C67531-Aug-81 | | | | |
| 075 | 6 | 101-4333 | 1A | RES 33K OHM 1/4W 5%<br>R1,R2,R4,R5 | RP | P | 5 | P | C | P | EA | 4 | C675 | | | 24-Mar-83 | |
| 039 | 6 | 101-4392 | 1A | RES 3.9K OHM 1/4W 5%<br>R14 | RP | P | 1 | P | C | P | EA | 1 | C67531-Aug-81 | | | 14-Oct-83 | |
| 041 | 6 | 101-4510 | 1A | RES 51 OHM 1/4W 5%<br>R16 | RP | P | 1 | P | C | P | EA | 1 | C67531-Aug-81 | | | | |
| 077 | 6 | 101-4512 | 1A | RES 5.1K OHM 1/4W 5%<br>R22 | RP | P | 1 | P | C | P | EA | 1 | C67525-Mar-83 | | | | |
| 035 | 6 | 111-0021 | 1A | RES NETWORK 7 X 2K OHM 5%<br>RP1 | RP | P | 1 | P | C | P | EA | 1 | C67531-Aug-81 | | | | |
| 034 | 6 | 111-0022 | 1A | RES NETWORK 7 X 10K OHM 5%<br>RP2 | RP | P | 1 | P | C | P | EA | 1 | C67531-Aug-81 | | | | |
| 070 | 6 | 112-0102 | 1B | RES ARRAY 8 X 47 OHM 10% | RP | P | 1 | P | C | P | EA | 2 | C67531-Aug-81 | | | 12-Nov-81 | |
| 001 | 6 | 112-0105 | 1B | RES ARRAY 8 X 330 OHM<br>U1,U2 | RP | P | 1 | | * | P | EA | 2 | C67513-Nov-81 | | | 06-Nov-83 | |
| 081 | 6 | 112-0107 | 1B | RES ARRAY 8 X 100 OHM<br>U1,U2 | | * | * | | * | * | EA | 2 | C67507-Nov-83 | | | | |
| 043 | 6 | 125-5701 | 1B | CAP ELECT 47 uF -10%+75% 10V<br>C8,C21,C29,C30 | RP | P | 1 | | C | P | EA | 4 | C77231-Aug-81 | | | | |
| 045 | 6 | 130-0007 | 1B | CAP CER AXIAL .1 UF +80%-20% 25V | RP | P | 1 | | C | P | EA | 31 | C93907-Apr-83 | | | | |
| 032 | 6 | 197-0017 | A | CRYSTAL, 10MHz | EX | P | 7 | | * | P | EA | 1 | 792 31-Aug-81 | | | 14-Oct-83 | |
| 078 | 6 | 197-0502 | 1A | CLOCK OSC,CRYSTAL 10 MHz (TTL) | | * | * | | * | * | EA | 1 | C57615-Oct-83 | | | | |
| 080 | 6 | 197-0504 | 1A | CLOCK OSCILLATOR,CRYSTAL,10 MHz<br>ALT FOR ITEM 78<br>ALT QTY 1 | | * | * | | * | * | EA | 0 | C58416-Oct-83 | | | | |
| 029 | 6 | 301-0006 | A | IC, 7406<br>U41 | EX | P | 7 | | * | P | EA | 1 | C06331-Aug-81 | | | | |
| 009 | 6 | 305-0000 | A | IC, 74LS00N<br>U15,U26 | RI | P | 1 | P | B | P | EA | 2 | 442 31-Aug-81 | | | | |
| 026 | 6 | 305-0002 | A | IC, 74LS02N<br>U31 | RI | P | 1 | P | B | P | EA | 1 | 442 31-Aug-81 | | | | |
| 025 | 6 | 305-0008 | A | IC, 74LS08<br>U32 | RI | P | 1 | P | B | P | EA | 1 | 442 31-Aug-81 | | | | |
| [illegible] | [illegible] | [illegible] | A | IC, 74LS14<br>U27 | RI | P | 1 | P | B | P | EA | 1 | 442 31-Aug-81 | | | | |
| [illegible] | [illegible] | [illegible] | A | IC, 74LS38 QUAD 2 INPUT BUFFER<br>U24 | RI | P | 1 | P | B | P | EA | 1 | 442 31-Aug-81 | | | | |
| [illegible] | [illegible] | [illegible] | A | IC, 74LS10<br>[illegible] | RI | P | 1 | P | B | P | EA | 1 | 442 31-Aug-81 | | | | |

EFFECTIVITY DATE: [illegible]

INDENTED BILLS OF MATERIAL

PARENT PART: A3M0305 3 PROFILE FOR APPLE /// UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
ERC: B SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | I F | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S F | A B | P I | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 014 | 6 | 305-0153 | A | IC, 74LS153 | RI | P | 1 | P | B | P | EA | 1 | 442 | 31-Aug-81 | | | |
| | | | | U6 | | | | | | | | | | | | | |
| 004 | 6 | 305-0161 | A | IC, 74LS161 | RI | P | 1 | P | B | P | EA | 3 | 442 | 31-Aug-81 | | | |
| | | | | U10,U16,U17 | | | | | | | | | | | | | |
| 020 | 6 | 305-0163 | A | IC, 74LS163 | RI | P | 1 | P | B | P | EA | 1 | 442 | 31-Aug-81 | | | |
| | | | | U22 | | | | | | | | | | | | | |
| 013 | 6 | 305-0174 | A | IC, 74LS174 | RI | P | 1 | P | B | P | EA | 3 | 442 | 31-Aug-81 | | | |
| | | | | U30,U34,U38 | | | | | | | | | | | | | |
| 003 | 6 | 305-0240 | A | IC, 74LS240 | RI | P | 1 | | B | P | EA | 1 | C127 | 31-Aug-81 | | | |
| | | | | U9 | | | | | | | | | | | | | |
| 002 | 6 | 305-0244 | A | IC, 74LS244 | RI | P | 1 | P | B | P | EA | 2 | 442 | 31-Aug-81 | | | |
| | | | | U4,U5 | | | | | | | | | | | | | |
| 010 | 6 | 305-0257 | A | IC, 74LS257 | RI | P | 1 | P | B | P | EA | 2 | 442 | 31-Aug-81 | | | |
| | | | | U13,U20 | | | | | | | | | | | | | |
| 030 | 6 | 305-0280 | A | IC, 74LS280 9-BIT PARITY | RI | P | 1 | P | B | P | EA | 1 | 649 | 31-Aug-81 | | | |
| | | | | U3 | | | | | | | | | | | | | |
| 015 | 6 | 305-0323 | A | IC, 74LS323 | RI | P | 1 | P | B | P | EA | 1 | 442 | 31-Aug-81 | | | |
| | | | | U14 | | | | | | | | | | | | | |
| 047 | 6 | 305-0377 | A | IC, 74LS377 | RI | P | 1 | P | B | P | EA | 1 | 442 | 31-Aug-81 | | | |
| | | | | U21 | | | | | | | | | | | | | |
| 024 | 6 | 307-0074 | A | IC, 74S74 | RI | P | 1 | P | B | P | EA | 1 | C063 | 31-Aug-81 | | | |
| | | | | U39 | | | | | | | | | | | | | |
| 011 | 6 | 307-0086 | A | IC, 74S86 | RI | P | 1 | P | B | P | EA | 1 | C063 | 31-Aug-81 | | | |
| | | | | U28 | | | | | | | | | | | | | |
| 008 | 6 | 334-2114 | 1C | IC 1024x4 STATIC RAM 2114 TST&BRN | RL | P | 1 | P | C | P | EA | 2 | C621 | 31-Aug-81 | | | |
| | | | | U11,U18 | | | | | | | | | | | | | |
| 000 | 7 | 062-0083 | 1B | SPEC, 2114 RAM BURN-IN | EX | D | 7 | | * | U | EA | 0 | C314 | 15-Jul-83 | | | |
| 001 | 7 | 333-2114 | 1B | IC 1024 X 4 STATIC RAM 2114 | RL | P | 1 | | C | P | EA | 2 | C437 | 15-Jul-83 | | | |
| 073 | 6 | 335-0004 | A | PROM, 512 X 8 (UNPROGRAMMED) | RL | P | 1 | P | C | P | EA | 1 | C021 | 31-Aug-81 | | 12-Nov-81 | |
| 071 | 6 | 335-0006 | A | PROG OCT 16 INPT AND-OR-INVT GT A | RL | P | 1 | P | B | P | EA | 1 | 642 | 31-Aug-81 | | 12-Nov-81 | |
| 072 | 6 | 335-6309 | A | PROM, MMI 6309-1 | RL | P | 1 | P | C | P | EA | 1 | C-6 | 31-Aug-81 | | 12-Nov-81 | |
| 012 | 6 | 337-8253 | MA | PROGRAMMABLE INTERVAL TIMER | RL | P | 1 | P | A | P | EA | 1 | 642 | 31-Aug-81 | | | |
| | | | | U33 | | | | | | | | | | | | | |
| 004 | 6 | 337-8603 | B | IC SOCKET MICROPRO. W/24P PIGGYBA | RI | P | 1 | | * | P | EA | 1 | C148 | 31-Aug-81 | | 04-May-82 | |
| | | | | U25 | | | | | | | | | | | | | |
| 018 | 6 | 337-9401 | A | CRC GENERATOR/CHECKER. | RL | P | 1 | P | A | P | EA | 1 | 642 | 31-Aug-81 | | | |
| | | | | U35 | | | | | | | | | | | | | |
| 021 | 6 | 341-0066 | A | PROM, U29 | RL | A | 1 | | * | P | EA | 1 | F105 | 13-Nov-81 | | | |
| | | | | (MMI 6309-1) | | | | | | | | | | | | | |
| 022 | 6 | 341-0067 | A | PROM, U37 | RL | A | 1 | | * | P | EA | 1 | F105 | 13-Nov-81 | | | |
| 007 | 6 | 341-0068 | A | RAMPAL | RL | P | 1 | | * | P | EA | 1 | F105 | 13-Nov-81 | | | |
| | | | | U27 (OCT 16 INPT | | | | | | | | | | | | | |
| | | | | AND-OR-INVT GT ARY) | | | | | | | | | | | | | |
| 031 | 6 | 341-0080 | B | PROG PROM 2K PROFILE CONTROLLER | RL | P | 1 | | * | P | EA | 1 | F184 | 13-Nov-81 | | 04-May-82 | |
| [illegible] | [illegible] | 341-01[illegible] | A | EPROM FIRMWARE 3.9[illegible] 78 PROFILE-[illegible] | RL | A | 1 | | * | P | EA | 1 | [illegible] | 31-Aug-81 | | 12-Nov-81 | |
| [illegible] | [illegible] | [illegible] | A | EPROM, 2048 X 8 2716 | RL | P | 1 | P | C | P | EA | 1 | 64[illegible] | 31-Aug-81 | | | |
| [illegible] | [illegible] | [illegible]-2021 | A | QUAD DARLINGTON [illegible] ARRAY 2074B | RP | P | 1 | P | B | P | EA | 2 | [illegible] | 31-Aug-81 | | | |
| | | | | U7,U8 | | | | | | | | | | | | | |
| [illegible] | [illegible] | [illegible] | A | VOLTAGE CONTROLLED MULTIVIBRATOR | RL | P | 1 | P | P | P | EA | 1 | [illegible] | 31-Aug-81 | | 14-Oct-83 | |
| | | | | [illegible] | | | | | | | | | | | | | |

EFFECTIVITY DATE: ALL

I N D E N T E D   B I L L S   O F   M A T E R I A L

PARENT PART: A3M0305 | 3 PROFILE FOR APPLE /// | UM: EA | PROD CODE: DH | ECN: F354 | ASSEMBLY QTY: 1
ERC: B SRCE CODE: G TYPE: 1 | ABC: * | PLAN CODE: P | DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | F I | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S I | A B | P I | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 033 | 6 | 371-4001 | 1A | DIODE RECTIFIER 1N4001 1.0A 50V | RP | P | 1 | P | C | P | EA | 8 | C599 | 31-Aug-81 | | | |
| | | | | CR1-CR8 | | | | | | | | | | | | | |
| 076 | 6 | 371-4128 | 1A | DIODE ZENER 1N4128 250mW 60V | RP | P | 1 | | * | P | EA | 4 | C538 | 31-Aug-81 | | 12-Nov-81 | |
| 064 | 6 | 371-4148 | A | DIODE FAST SWITCH 1N4148 200mA 75 | RP | P | 1 | P | C | P | EA | 4 | C538 | 13-Nov-81 | | | |
| | | | | CR9-CR12 | | | | | | | | | | | | | |
| 062 | 6 | 400-1406 | 1C | SCR 4-40X3/8 PN HD CRS REC STL ZN | EX | X | 7 | P | C | P | EA | 2 | C540 | 31-Aug-81 | | | |
| 055 | 6 | 511-1401 | C | SOCKET, IC 14 PIN | RP | P | 1 | P | C | P | EA | 3 | 799 | 07-Apr-83 | | | |
| 056 | 6 | 511-1601 | C | SOCKET, IC 16 PIN | RP | P | 1 | P | C | P | EA | 11 | 799 | 31-Aug-81 | | | |
| 057 | 6 | 511-1801 | C | SOCKET, IC 18 PIN | RP | P | 1 | P | C | P | EA | 2 | 799 | 31-Aug-81 | | | |
| 058 | 6 | 511-2001 | C | SOCKET, IC 20 PIN | RP | P | 1 | P | C | P | EA | 7 | 799 | 31-Aug-81 | | | |
| 059 | 6 | 511-2401 | C | SOCKET, IC 24 PIN | RP | P | 1 | P | C | P | EA | 1 | 799 | 31-Aug-81 | | | |
| 060 | 6 | 511-4001 | C | SOCKET, IC 40 PIN | RP | P | 1 | P | C | P | EA | 1 | 799 | 31-Aug-81 | | | |
| 061 | 6 | 515-0005 | 1B | CONN,PIN,SINGLE | RP | P | 1 | P | C | P | EA | 9 | C781 | 31-Aug-81 | | | |
| 054 | 6 | 515-0053 | 1C | CONN,HDR,STR,2P | RP | P | 1 | P | C | P | EA | 1 | C781 | 31-Aug-81 | | | |
| | | | | P7 | | | | | | | | | | | | | |
| 053 | 6 | 515-0082 | 1A | HEADER, 10 PIN RT ANGLE W/O EARS | RP | P | 1 | | C | P | EA | 1 | C480 | 31-Aug-81 | | 16-Nov-82 | |
| | | | | P5 | | | | | | | | | | | | | |
| 066 | 6 | 515-0150 | 1A | CONN,HDR,RT ANG,5P,.156 CTR,W/LKG | RP | P | 1 | | * | P | EA | 1 | C781 | 13-Nov-81 | | | |
| | | | | P3 | | | | | | | | | | | | | |
| 067 | 6 | 515-0160 | 1A | CONN,HDR,RT ANG,2P,W/LKG RAMP | RP | P | 1 | | * | P | EA | 1 | C781 | 13-Nov-81 | | | |
| | | | | P4 | | | | | | | | | | | | | |
| 065 | 6 | 519-0100 | 1B | CONN,PC TAIL,90 DEG,MET.LNG FTPRI | RP | P | 1 | | * | P | EA | 1 | C781 | 13-Nov-81 | | | |
| | | | | P1 | | | | | | | | | | | | | |
| 049 | 6 | 520-0011 | 1A | CONN,PLUG,CONTACT KEY,'D' SUB | RP | P | 1 | | C | P | EA | 1 | C781 | 31-Aug-81 | | | |
| | | | | P1 | | | | | | | | | | | | | |
| 079 | 6 | 570-2239 | 1A | WIRE,STRANDED 22 AWG,GREEN,BULK | | * | * | | * | * | FT | 0.0420 | C509 | 15-Oct-83 | | | |
| 068 | 6 | 571-0001 | A | WIRE, BUS BAR, 20 AWG, .5 IN. | EX | X | 7 | | * | U | FT | 1 | F232 | 13-Nov-81 | | 14-Oct-83 | |
| 046 | 6 | 820-0055 | 1D | PCB, CONTROLLER, PROFILE | RP | P | 1 | | * | P | EA | 1 | F176 | 31-Aug-81 | | | |
| 069 | 6 | 835-0150 | A | NUT/WASHER ASSY, (KEPS) 4-40 | EX | P | 7 | | * | P | EA | 2 | 834 | 13-Nov-81 | | | |
| 001 | 4 | 656-5101 | AD | INACTIVE-SBSY DRIVE W/ANA BD, TST | WS | A | 1 | | * | P | EA | 1 | P330 | 31-Aug-81 | | 13-Dec-82 | |
| 005 | 5 | 400-1604 | 1C | SCR 6-32X1/4 PN HD CRS REC STL ZN | EX | X | 7 | | C | P | EA | 4 | C540 | 01-Jul-82 | | 13-Dec-82 | |
| 004 | 5 | 400-5404 | C | SCR 4-40X1/4 BINDER HD PHILLIPS | EX | X | 7 | | * | P | EA | 2 | C540 | 31-Aug-81 | | 30-Jun-82 | |
| 008 | 5 | 400-5604 | B | INACTIVE,SCREW,CRS RES BND 6-32X1 | EX | X | 7 | P | C | P | EA | 0 | C123 | | | 30-Jun-82 | |
| 007 | 5 | 590-0105 | A | CABLE ASSY, #16 AWG GROUND WIRE | | P | * | | * | P | EA | 1 | F180 | 01-Mar-82 | | 13-Dec-82 | |
| 003 | 6 | 517-1101 | 1B | TERMINAL, RING TONGUE #8 | | P | * | | * | P | EA | 1 | C344 | 01-Mar-82 | | | |
| 002 | 6 | 517-1211 | 1A | TERMINAL, RECEPT 4.75 X .51 TAB | | P | * | | * | P | EA | 1 | C628 | 01-Mar-82 | | | |
| 001 | 6 | 570-1601 | A | WIRE, 16 AWG, GRAY, 26/30, 4.80" | | X | * | | * | P | EA | 1 | C057 | 01-Mar-82 | | | |
| 002 | 5 | 656-4101 | A | ASSY, PCB TSTD, ANALOG | WT | A | 1 | | * | P | EA | 1 | F111 | 31-Aug-81 | | 13-Dec-82 | |
| 001 | 6 | 656-0101 | 1F | ASSY, PCB UNTSTD, ANALOG, PROFILE | WU | A | 1 | | * | P | EA | 1 | L050 | 31-Aug-81 | | | |
| 000 | 7 | 050-5005 | 1J | SCHEMATIC, ANALOG BD, PROFILE | D | D | 7 | | * | U | EA | 0 | F697 | 01-Mar-82 | | | |
| 050 | 7 | 101-4010 | 1A | RES 1 OHM 1/4W 5% | RP | P | 1 | S | C | P | EA | 1 | C675 | 28-Jul-81 | | | |
| | | | | R101 | | | | | | | | | | | | | |
| 051 | 7 | 101-4101 | 1A | RES 100 OHM 1/4W 5% | RP | P | 1 | P | C | P | EA | 2 | C675 | 28-Jul-81 | | | |
| | | | | R4,67 | | | | | | | | | | | | | |
| 053 | 7 | 101-4102 | 1A | RES 1K OHM 1/4W 5% | RP | P | 1 | P | C | P | EA | 19 | C675 | 28-Jul-81 | | | |
| | | | | R2,3,R15,R20-21 | | | | | | | | | | | | | |
| | | | | [illegible],R48,R54,[illegible] | | | | | | | | | | | | | |
| | | | | R60-62,R95-98 | | | | | | | | | | | | | |
| | | | | R104,R108 | | | | | | | | | | | | | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] OHM 1/4W 5% | RP | P | 1 | P | C | P | EA | 11 | [illegible] | [illegible] | | | |

EFFECTIVITY DATE: ALL

INDENTED BILLS OF MATERIAL

PARENT PART: A3M0305 3 PROFILE FOR APPLE /// UM: EA PROD CODE: DH ECN: F354 ASSEMBLY QTY: 1
ERC: B SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S P | A B | R L | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | R13,17,42-45,47 R49,70,81,117 | | | | | | | | | | | | | |
| 083 | 7 | 101-4104 | 1A | RES 100K OHM 1/4W 5% R115 | RP | P | 1 | P | C | P | EA | 1 | C67528 | Jul-81 | | | |
| 080 | 7 | 101-4111 | 1A | RES 110 OHM 1/4W 5% R91,92 | RP | P | 1 | | C | P | EA | 2 | C67528 | Jul-81 | | | |
| 064 | 7 | 101-4121 | 1A | RES 130 OHMS 1/4W 5% R25,26 | RP | P | 1 | P | C | P | EA | 2 | C67528 | Jul-81 | | | |
| 077 | 7 | 101-4122 | 1A | RES 1.2K OHM 1/4W 5% R107 | RP | P | 1 | P | C | P | EA | 1 | C67528 | Jul-81 | | | |
| 075 | 7 | 101-4123 | 1A | RES 12K OHM 1/4W 5% R73 | RP | P | 1 | P | C | P | EA | 1 | C67528 | Jul-81 | | | |
| 072 | 7 | 101-4151 | 1A | RES 150 OHM 1/4W 5% R36,68,114 | RP | P | 1 | P | C | P | EA | 3 | C67528 | Jul-81 | | | |
| 061 | 7 | 101-4152 | 1A | RES 1.5K OHM 1/4W 5% R7,82,83 | RP | P | 1 | P | C | P | EA | 3 | C67528 | Jul-81 | | | |
| 056 | 7 | 101-4182 | 1A | RES 1.8K OHM 1/4W 5% R69 | RP | P | 1 | P | C | P | EA | 1 | C67528 | Jul-81 | | | |
| 081 | 7 | 101-4201 | 1A | RES 200 OHM 1/4W 5% R110 | RP | P | 1 | P | C | P | EA | 1 | C67528 | Jul-81 | | | |
| 069 | 7 | 101-4203 | 1A | RES 20.0K OHM 1/4W 5% R16,50 | RP | P | 1 | P | C | P | EA | 2 | C76028 | Jul-81 | | | |
| 062 | 7 | 101-4220 | 1A | RES 22 OHM 1/4W 5% R23,24,32 | RP | P | 1 | P | C | P | EA | 3 | C67528 | Jul-81 | | | |
| 055 | 7 | 101-4241 | 1A | RES 240 OHM 1/4W 5% R18,19 | RP | P | 1 | P | C | P | EA | 2 | C67528 | Jul-81 | | | |
| 079 | 7 | 101-4242 | 1A | RES 2.4K OHM 1/4W 5% R80,40,41 | RP | P | 1 | P | C | P | EA | 3 | C67528 | Jul-81 | | | |
| 067 | 7 | 101-4243 | 1A | RES 24K OHM 1/4W 5% R35 | RP | P | 1 | P | C | P | EA | 1 | C67528 | Jul-81 | | | |
| 066 | 7 | 101-4244 | 1A | RES 240K OHM 1/4W 5% R31 | RP | P | 1 | P | C | P | EA | 1 | C67528 | Jul-81 | | | |
| 078 | 7 | 101-4272 | 1A | RES 2.7K OHM 1/4W 5% R74 | RP | P | 1 | P | C | P | EA | 1 | C67528 | Jul-81 | | | |
| 082 | 7 | 101-4301 | 1A | RES 300 OHM 1/4W 5% R111 | RP | P | 1 | P | C | P | EA | 1 | C67528 | Jul-81 | | | |
| 070 | 7 | 101-4331 | 1A | RES 330 OHM 1/4W 5% R89,90 | RP | P | 1 | P | C | P | EA | 2 | C67528 | Jul-81 | | | |
| 073 | 7 | 101-4332 | 1A | RES 3.3K OHM 1/4W 5% R100,76 | RP | P | 1 | P | C | P | EA | 2 | C67528 | Jul-81 | | | |
| 049 | 7 | 101-4390 | 1A | RES 39 OHM 1/4W 5% R78,R112 | RP | P | 1 | P | C | P | EA | 2 | C67528 | Jul-81 | | | |
| 054 | 7 | 101-4391 | 1A | RES 390 OHM 1/4W 5% R55 | RP | P | 1 | P | C | P | EA | 1 | C67528 | Jul-81 | | | |
| [illegible] | [illegible] | 101-4392 | 1A | RES 3.9K OHM 1/4W 5% R9,8,113,1,2? R118,11? | RP | P | 1 | P | C | P | EA | [illegible] | C67513 | Apr-83 | | | |
| [illegible] | [illegible] | 101-44?1 | 1A | [illegible] 470 OHM 1/4W 5% R37,5? 5?,?? | RP | P | 1 | P | C | P | EA | 4 | C67528 | Jul-81 | | | |
| [illegible] | [illegible] | [illegible] | 1A | [illegible] OHM 1/4W [illegible] | RP | P | 1 | P | C | P | EA | 2 | [illegible] | Jul-81 | | | |

EFFECTIVITY DATE: ALL

INDENTED BILLS OF MATERIAL

PARENT PART: A3M0305 3 PROFILE FOR APPLE /// UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
ERC: B SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S F | A B | P L | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | R116,71 | | | | | | | | | | | | | |
| 065 | 7 | 101-4511 | 1A | RES 510 OHM 1/4W 5% | RP | P | 1 | P | C | P | EA | 5 | C675 | 28-Jul-81 | | | |
| | | | | R63,64,29,30,28 | | | | | | | | | | | | | |
| 071 | 7 | 101-4561 | 1A | RES 560 OHM 1/4W 5% | RP | P | 1 | P | C | P | EA | 1 | C675 | 28-Jul-81 | | | |
| | | | | R99 | | | | | | | | | | | | | |
| 045 | 7 | 101-4681 | 1A | RES 680 OHMS 1/4W 5% | RP | P | 1 | P | C | P | EA | 3 | C675 | 28-Jul-81 | | | |
| | | | | R11-12,R22 | | | | | | | | | | | | | |
| 074 | 7 | 101-4751 | 1A | RES 750 OHM 1/4W 5% | RP | P | 1 | | C | P | EA | 2 | C675 | 28-Jul-81 | | | |
| | | | | R75,79 | | | | | | | | | | | | | |
| 063 | 7 | 101-4752 | 1A | RES 7.5K OHM 1/4W 5% | RP | P | 1 | P | C | P | EA | 4 | C675 | 28-Jul-81 | | | |
| | | | | R5,6,33,34 | | | | | | | | | | | | | |
| 076 | 7 | 101-4822 | 1A | RES 8.2K OHM 1/4W 5% | RP | P | 1 | P | C | P | EA | 1 | C675 | 28-Jul-81 | | | |
| | | | | R72 | | | | | | | | | | | | | |
| 057 | 7 | 101-4823 | 1A | RES 82K OHM 1/4W 5% | RP | P | 1 | | C | P | EA | 1 | C675 | 28-Jul-81 | | | |
| | | | | R46 | | | | | | | | | | | | | |
| 048 | 7 | 108-1543 | 1A | RES 1.54K OHM 1/4W 1% | RP | P | 1 | | C | P | EA | 1 | C758 | 28-Jul-81 | | | |
| | | | | R84 | | | | | | | | | | | | | |
| 042 | 7 | 108-1783 | 1A | RES 1.78K OHM 1/4W 1% | RP | P | 1 | | C | P | EA | 1 | C758 | 28-Jul-81 | | | |
| | | | | R10 | | | | | | | | | | | | | |
| 041 | 7 | 108-1963 | 1A | RES 1.96K OHM 1/4W 1% | RP | P | 1 | | * | P | EA | 2 | C758 | 01-Mar-82 | | | |
| | | | | R105,104 | | | | | | | | | | | | | |
| 047 | 7 | 108-3833 | 1A | RES 3.83K OHM 1/4W 1% | RP | P | 1 | | * | P | EA | 4 | C758 | 31-Jul-81 | | | |
| | | | | R93,R95-96,R97 | | | | | | | | | | | | | |
| 039 | 7 | 108-3923 | 1A | RES 3.92K OHM 1/4W 1% | RP | P | 1 | P | C | P | EA | 2 | C758 | 28-Jul-81 | | | |
| | | | | R65,66 | | | | | | | | | | | | | |
| 046 | 7 | 108-4531 | 1A | RES 45.3 OHM 1/4W 1% | RP | P | 1 | | C | P | EA | 1 | C758 | 28-Jul-81 | | | |
| | | | | R14 | | | | | | | | | | | | | |
| 043 | 7 | 108-5623 | 1A | RES 5.62K OHM 1/4W 1% | RP | P | 1 | | C | P | EA | 2 | C758 | 28-Jul-81 | | | |
| | | | | R94,R98 | | | | | | | | | | | | | |
| 106 | 7 | 109-0002 | 0 | POT, TRIM 1K OHM 20% | RP | P | 1 | P | C | P | EA | 1 | 442 | 10-Oct-83 | | | |
| 040 | 7 | 109-0005 | A | POT,TRIM 500 OHM,20% | RP | P | 1 | | * | P | EA | 1 | C045 | 18-May-82 | | 09-Oct-83 | |
| | | | | ALTN P/N 109-0420 | | | | | | | | | | | | | |
| 098 | 7 | 109-0410 | 1A | POT, 500 OHM 18 - 25 TURNS | RP | P | 1 | | C | P | EA | 1 | C504 | 28-Jul-81 | | 02-Mar-82 | |
| 099 | 7 | 109-0420 | MA | POT, 1 TURN .250 DIA, 500 OHMS | RP | P | 1 | | C | P | EA | 0 | P105 | 18-May-82 | | 09-Oct-83 | |
| | | | | ALTN P/N FOR ITEM 40 | | | | | | | | | | | | | |
| 038 | 7 | 111-0023 | 1A | RES NETWORK 7 X 560 OHM 5% | RP | P | 1 | | C | P | EA | 7 | C675 | 28-Jul-81 | | | |
| | | | | RP2-8 | | | | | | | | | | | | | |
| 094 | 7 | 111-0024 | 1A | RES NETWORK 7 X 4.7K OHM 5% | RP | P | 1 | | C | P | EA | 1 | C675 | 28-Jul-81 | | | |
| | | | | RP-1 | | | | | | | | | | | | | |
| 059 | 7 | 127-0100 | 1B | CAP TANT 4.7 uF 20% 10V | RP | P | 1 | | * | P | EA | 1 | C599 | 28-Jul-81 | | | |
| | | | | C59 | | | | | | | | | | | | | |
| 037 | 7 | 127-0101 | 1B | CAP TANT 10 uF 20% 15/16V | RP | P | 1 | | * | P | EA | 3 | C599 | 28-Jul-81 | | | |
| | | | | C38-C40 | | | | | | | | | | | | | |
| 029 | 7 | 130-0002 | 1B | CAP CER AXIAL .01 UF +80%-20% 25V | RP | P | 1 | P | C | P | EA | 4 | C939 | 28-Jul-81 | | | |
| | | | | C1-2,6,7 | | | | | | | | | | | | | |
| 097 | [illegible] | [illegible] | 1B | CAP CER AXIAL .1 UF +80%-20% 25V | RP | P | 1 | [illegible] | C | P | EA | 2 | C939 | [illegible] | | 14-Apr-83 | |
| | | | | C13,C14 | | | | | | | | | | | | | |
| [illegible] | [illegible] | [illegible] | 1B | CAP CER AXIAL .1 UF +80%-20% 25V | RP | P | 1 | | C | P | EA | 31 | C939 | 01-Mar-82 | | | |
| | | | | C3-5,10-14,21,22,25, | | | | | | | | | | | | | |
| | | | | [illegible],42,45,47 | | | | | | | | | | | | | |

EFFECTIVITY DATE: ALL

INDENTED BILLS OF MATERIAL

PARENT PART: A3M0305 3 PROFILE FOR APPLE /// UM: EA PROD CODE: DH ECN: F354 ASSEMBLY QTY: 1
ERC: B SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | P | A B R | P L | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | C48-51,53,55-57,63 | | | | | | | | | | | | | |
| 031 | 7 | 130-0200 | 1A | CAP CER .001 uF 10% 25V | RF | P | 1 | | C | P | EA | 2 | C599 | 28-Jul-81 | | | |
| | | | | C24, C32 | | | | | | | | | | | | | |
| 030 | 7 | 130-0201 | 1A | CAP CER .0022 uF 10% 25V | RF | P | 1 | | C | P | EA | 8 | C599 | 28-Jul-81 | | | |
| | | | | C19,23,28-31,26,62 | | | | | | | | | | | | | |
| 036 | 7 | 137-5401 | 1A | CAP DIP MICA 20 pF 5% 500V | RF | P | 1 | | C | P | EA | 1 | C541 | 28-Jul-81 | | | |
| | | | | C61 | | | | | | | | | | | | | |
| 035 | 7 | 137-5701 | 1A | CAP DIP MICA 47 pF 5% 500V | RF | P | 1 | P | C | P | EA | 1 | C541 | 28-Jul-81 | | | |
| | | | | C34 | | | | | | | | | | | | | |
| 034 | 7 | 137-5801 | 1A | CAP DIP MICA 75 pF 5% 500V | RF | P | 1 | | C | P | EA | 1 | C541 | 28-Jul-81 | | | |
| | | | | C8 | | | | | | | | | | | | | |
| 032 | 7 | 137-6101 | 1A | CAP DIP MICA 100 pF 5% 500V | RF | P | 1 | P | C | P | EA | 1 | C541 | 28-Jul-81 | | | |
| | | | | C33 | | | | | | | | | | | | | |
| 033 | 7 | 137-6301 | 1A | CAP DIP MICA 150 pF 5% 500V | RF | P | 1 | | C | P | EA | 4 | C541 | 28-Jul-81 | | | |
| | | | | C9, C18, C17, C20 | | | | | | | | | | | | | |
| 027 | 7 | 151-4701 | 1C | INDUCTOR, 5.6 uH 10% | RF | P | 1 | | * | P | EA | 2 | C395 | 28-Jul-81 | | | |
| | | | | L1, L2 | | | | | | | | | | | | | |
| 021 | 7 | 156-0100 | A | DELAY LINE 14 PIN DIP 100 OHM, 50 | RF | P | 1 | | * | P | EA | 1 | 792 | 28-Jul-81 | | | |
| | | | | DLY 2 | | | | | | | | | | | | | |
| 022 | 7 | 156-0110 | A | DELAY LINE 14 PIN DIP 500 OHM 100 | RF | P | 1 | | * | P | EA | 1 | 792 | 28-Jul-81 | | | |
| | | | | DLY 1 | | | | | | | | | | | | | |
| 007 | 7 | 301-0045 | A | IC, 7445 | RI | P | 1 | | C | P | EA | 1 | C063 | 28-Jul-81 | | | |
| | | | | U4 | | | | | | | | | | | | | |
| 001 | 7 | 301-0074 | A | IC, 7474 | RI | P | 1 | P | C | P | EA | 1 | C063 | 28-Jul-81 | | | |
| | | | | U2 | | | | | | | | | | | | | |
| 005 | 7 | 305-0014 | A | IC, 74LS14 | RI | P | 1 | P | B | P | EA | 1 | 442 | 28-Jul-81 | | | |
| | | | | U30 | | | | | | | | | | | | | |
| 002 | 7 | 305-0174 | A | IC, 74LS174 | RI | P | 1 | P | B | P | EA | 1 | 442 | 28-Jul-81 | | | |
| | | | | U29 | | | | | | | | | | | | | |
| 004 | 7 | 307-0064 | A | IC, 74S64 | RI | P | 1 | | B | P | EA | 1 | C063 | 28-Jul-81 | | | |
| | | | | U27 | | | | | | | | | | | | | |
| 013 | 7 | 325-0102 | A | QUAD 2-INPUT NOR GATE | RI | P | 1 | | C | P | EA | 1 | 741 | 28-Jul-81 | | | |
| | | | | U18 | | | | | | | | | | | | | |
| 010 | 7 | 325-0107 | A | TRIPLE 2-INPT EXCL OR/EXCL NOR GA | RI | P | 1 | | C | P | EA | 2 | 741 | 28-Jul-81 | | | |
| | | | | U10, U15 | | | | | | | | | | | | | |
| 008 | 7 | 325-0114 | A | TRIPLE LINE RECEIVER | RI | P | 1 | | C | P | EA | 2 | 741 | 28-Jul-81 | | | |
| | | | | U5, U14 | | | | | | | | | | | | | |
| 009 | 7 | 325-0116 | A | TRIPLE LINE RECEIVER | RI | P | 1 | | C | P | EA | 2 | 741 | 28-Jul-81 | | | |
| | | | | U26, U9 | | | | | | | | | | | | | |
| 012 | 7 | 325-0117 | A | DL 2-WID 2-3-INPT OR-AND/OR-AND-I | RI | P | 1 | | C | P | EA | 1 | 741 | 28-Jul-81 | | | |
| | | | | U16 | | | | | | | | | | | | | |
| 011 | 7 | 325-0131 | B | IC ECL HIGH SPEED DUAL D FLIP-FLO | RI | P | 1 | | C | P | EA | 6 | C255 | 28-Jul-81 | | | |
| | | | | U11,17,19,20,21,22 | | | | | | | | | | | | | |
| 006 | 7 | 327-0453 | A | IC, DUAL PERIPHERAL DRIVES | RI | P | 1 | | * | P | EA | 1 | 757 | 28-Jul-81 | | | |
| | | | | U3 | | | | | | | | | | | | | |
| 02A | 7 | 335-0007 | A | PROG HEX 16 INPT REG AND-OR GT AR | RL | P | 1 | P | B | P | EA | 1 | 64[illegible] | 28-Jul-81 | | 0? Mar-83 | |
| [illegible] | 7 | [illegible] | A | MEMORY | RL | A | 1 | | * | P | EA | 1 | [illegible] | [illegible] | | | |
| | | | | PROG HEX 16 INPT | | | | | | | | | | | | | |
| | | | | REG AND OR GT ARY | | | | | | | | | | | | | |
| | | | | U[illegible] | | | | | | | | | | | | | |

EFFECTIVITY DATE: ALL

INDENTED BILLS OF MATERIAL

PARENT PART: A3M0305 7 PROFILE FOR APPLE /// UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
ERC: R SRCE CODE: G TYPE: 1 ARC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | I K | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S P | A R | P L | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 014 | 7 | 351-2907 | A | IC TRANS ARRAY QUAD PNP GEN PURPO<br>U31, U23, U12 | RP | P | 1 | | C | P | EA | 3 | 750 | 28-Jul-81 | | | |
| 016 | 7 | 351-3127 | A | TRANSISTOR,ARRAY NPN HIGH FREQ.<br>U7 | RP | P | 1 | | C | P | EA | 1 | 750 | 28-Jul-81 | | | |
| 023 | 7 | 351-6700 | A | IC, TRANS. ARRAY QUAD COMP. PAIRS<br>U1, U24<br>ITEM 100-103 ALT P/N | RI | P | 1 | | C | P | EA | 2 | 750 | 28-Jul-81 | | | |
| 058 | 7 | 353-0005 | A | IC REG. +5V 100MA TO 92, 3 TERMNL<br>RG1 | RI | P | 1 | | C | P | EA | 1 | 792 | 28-Jul-81 | | | |
| 018 | 7 | 353-0319 | A | IC, HIGH SPEED DUAL COMPARATOR<br>U13 | RI | P | 1 | | C | P | EA | 1 | 750 | 28-Jul-81 | | | |
| 017 | 7 | 353-0353 | A | DUAL FET OP AMP/BUFFER<br>U25,U8 | RP | P | 1 | | C | P | EA | 2 | 750 | 28-Jul-81 | | | |
| 015 | 7 | 353-0592 | A | IC, VIDEO AMPLIFIER<br>U6 | RI | P | 1 | | C | P | EA | 1 | 750 | 28-Jul-81 | | | |
| 024 | 7 | 371-4152 | 1A | DIODE FAST SWITCH 1N4152 500mW 30<br>CR1-14, CR16-21,<br>CR23-24, CR26 | RP | P | 1 | | C | P | EA | 23 | C538 | 28-Jul-81 | | | |
| 100 | 7 | 372-2222 | 1A | TRANS,NPN,SWITCHING AND AMP 2N222<br>ALT P/N FOR ITEM 23<br>U1-QTY 2 | | * | * | | * | * | EA | 0 | C403 | 08-Jul-83 | | | |
| 101 | 7 | 372-2907 | A | XSTR,2N2907, PNP SWITCH & AMPLIFI<br>ALT P/N FOR ITEM 23<br>U1-QTY 2 | | * | * | | * | * | EA | 0 | C259 | 08-Jul-83 | | | |
| 102 | 7 | 372-3904 | A | TRANSISTOR,NPN SW.&AMP. 2N3904<br>ALT P/N FOR ITEM 23<br>U24-QTY 2 | RP | P | 1 | P | C | P | EA | 0 | C303 | 08-Jul-83 | | | |
| 103 | 7 | 372-3906 | 1B | TRANSISTOR,PNP SW.&AMP. 2N3906<br>ALT P/N FOR ITEM 23<br>U24-QTY 2 | RP | P | 1 | P | C | P | EA | 0 | C768 | 08-Jul-83 | | | |
| 026 | 7 | 375-0010 | 1A | DIODE REFERENCE 10mA 1.2V<br>CR15 | RP | P | 1 | | C | P | EA | 1 | C538 | 28-Jul-81 | | | |
| 019 | 7 | 375-0012 | 1A | DIODE DUAL VOLT VAR CAP 200mA 32V<br>Q2 | RP | P | 1 | | * | P | EA | 1 | C538 | 28-Jul-81 | | | |
| 020 | 7 | 376-0016 | A | FET, N-CHANNEL VOLT CONTRL RESIS.<br>Q1 | RP | P | 1 | | * | P | EA | 1 | C303 | 28-Jul-81 | | | |
| 090 | 7 | 511-0801 | C | SOCKET, IC 8 PIN | RP | P | 1 | P | C | P | EA | 3 | 799 | 28-Jul-81 | | 14-Apr-83 | |
| 091 | 7 | 511-1401 | C | SOCKET, IC 14 PIN | RP | P | 1 | P | C | P | EA | 12 | 799 | 28-Jul-81 | | 14-Apr-83 | |
| 092 | 7 | 511-1601 | C | SOCKET, IC 16 PIN | RP | P | 1 | P | C | P | EA | 17 | 799 | 28-Jul-81 | | 14-Apr-83 | |
| 093 | 7 | 511-2001 | C | SOCKET, IC 20 PIN | RP | P | 1 | P | C | P | EA | 1 | 799 | 28-Jul-81 | | 14-Apr-83 | |
| 089 | 7 | 515-0005 | 1B | CONN,PIN,SINGLE | RP | P | 1 | P | C | P | EA | 15 | C781 | 28-Jul-81 | | | |
| 087 | 7 | 515-0120 | 1A | CONN,HDR,SGL ROW,4P | RP | P | 1 | | * | P | EA | 1 | C781 | 28-Jul-81 | | 02-Mar-82 | |
| 085 | 7 | 515-0130 | 1B | CONN,HDR,RT ANG,DBL ROW,8/16P<br>J5 | RP | P | 1 | | * | P | EA | 1 | C781 | 28-Jul-81 | | | |
| 098 | [illegible] | 515-0131 | 1B | CONN,HDR,RT ANG,DBL ROW,17/34P<br>[illegible] | RP | P | 1 | | C | P | EA | 1 | C781 | 01-Mar-82 | | 28 Aug-83 | |
| [illegible] | [illegible] | [illegible] | 1A | CONN,HDR,RT ANG,SE,W/LEG RAMP<br>[illegible] | RP | P | 1 | | * | P | EA | [illegible] | C781 | 28-Jul-81 | | | |
| 10? | [illegible] | [illegible] | 1A | CONN,HDR,RT ANG,DBL ROW,17/34P<br>[illegible] | | * | * | | * | * | EA | 1 | C781 | 29 Aug-83 | | | |

EFFECTIVITY DATE: ALL

INDENTED BILLS OF MATERIAL

PARENT PART: A3M0305 3 PROFILE FOR APPLE /// UM: EA PROD CODE: DH ECN: F354 ASSEMBLY QTY: 1
ERC: B SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E F | PART DESCRIPTION / REMARKS | PE CD | S C | T Y | S F | A B | P L | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 104 | 7 | 550-0101 | 1C | TUBING, HEAT SHRINK 1/4 ID BLACK | EX | X | 7 | P | C | P | FT | 0 | C503 | 08-Jul-83 | | | |
| | | | | USE W/ALT P/N | | | | | | | | | | | | | |
| | | | | 100-101 ON U1 | | | | | | | | | | | | | |
| 095 | 7 | 820-0054 | AF | PCB, ANALOG PROFILE | RP | P | 1 | | * | P | EA | 1 | F214 | 01 Mar-82 | | | |
| 001 | 5 | 699-4054 | A | ASSY. TEST. OEM HEAD DISK (H.D.A. | VX | P | 1 | P | A | P | EA | 1 | 710 | 31-Aug-81 | | 13-Dec-82 | |
| 001 | 6 | 699-0054 | A | ASSY, O.E.M. HEAD DISC (H.D.A.) | VX | A | 1 | P | A | P | EA | 1 | 600 | 15-May-81 | | | |
| 003 | 5 | 805-0089 | AA | BRACKET, SUPPORT, PROFILE | RP | P | 1 | | * | P | EA | 1 | P234 | 31-Aug-81 | | 30-Jun-82 | |
| 006 | 5 | XXX-XXX1 | 0 | 390 OHM RES | | * | * | | D | * | EA | 0 | | 31-Aug-81 | | 13-Dec-82 | |
| | | | | ASSY, PCB, MTR CNTRL | | | | | | | | | | | | | |
| | | | | (PART OF ITEM 1) | | | | | | | | | | | | | |
| 002 | 4 | 656-5102 | B | INACTIVE-SBSY, POWER SUPPLY | WS | A | 1 | | * | P | EA | 1 | P330 | 31-Aug-81 | | 13-Dec-82 | |
| 009 | 5 | 400-3404 | 1C | SCR 4-40X1/4 FLT HD CRS REC STL Z | EX | P | 7 | | * | P | EA | 2 | C540 | 31-Aug-81 | | 01-Mar-82 | |
| 005 | 5 | 400-5604 | B | INACTIVE,SCREW,CRS RES BND 6-32X1 | EX | X | 7 | P | C | P | EA | 8 | C123 | 31-Aug-81 | | 01-Mar-82 | |
| 004 | 5 | 519-0034 | 1A | CONN,RCPT,INTL,POWER | RP | P | 1 | P | C | P | EA | 1 | C781 | 31-Aug-81 | | 01-Mar-82 | |
| 012 | 5 | 550-0101 | 1C | TUBING, HEAT SHRINK 1/4 ID BLACK | EX | X | 7 | P | C | P | FT | 0.3200 | C503 | 31-Aug-81 | | 01-Mar-82 | |
| 011 | 5 | 561-1800 | B | WIRE, 18 AWG, BLACK, 7 X 26 | EX | X | 7 | S | C | P | FT | 0.2400 | 764 | 31-Aug-81 | | 01-Mar-82 | |
| 017 | 5 | 561-2244 | B | WIRE, YELLOW, 22 AWG, 7 X 30 | EX | P | 7 | | * | P | FT | 0.1600 | 764 | 31-Aug-81 | | 01-Mar-82 | |
| 010 | 5 | 561-2255 | B | WIRE, GREEN, 22 AWG, 7 X 30 | EX | P | 7 | | * | P | FT | 0.1600 | 764 | 31-Aug-81 | | 01-Mar-82 | |
| 016 | 5 | 561-2277 | B | WIRE, VIOLET, 22 AWG, 7 X 30 | EX | P | 7 | | * | P | FT | 0.1600 | 764 | 31-Aug-81 | | 01-Mar-82 | |
| 018 | 5 | 561-2299 | B | WIRE, WHITE, 22 AWG, 7 X 30 | EX | P | 7 | | * | P | FT | 0.1600 | 764 | 31-Aug-81 | | 01-Mar-82 | |
| 002 | 5 | 590-0045 | A | CABLE ASSY, POWER SUPPLY, PROFILE | RC | P | 1 | | * | P | EA | 1 | P169 | 31-Aug-81 | | 01-Mar-82 | |
| 007 | 6 | 515-0032 | 1A | CONTACT,PIN,CRIMP SNAP-IN,.081 DI | RP | P | 1 | | C | P | EA | 2 | C781 | 31-Aug-81 | | | |
| 001 | 6 | 517-0060 | 1A | CONN,RCPT,INSUL.DISPL.,SGL ROW,5P | RP | P | 1 | | D | U | EA | 1 | C781 | 31-Aug-81 | | | |
| 002 | 6 | 517-0061 | 1A | CONN,RCPT,INSUL.DISPL.,SGL ROW,18 | RP | P | 1 | | * | U | EA | 1 | C781 | 31-Aug-81 | | | |
| 004 | 6 | 517-1101 | 1B | TERMINAL RING TONGUE #6 | EX | X | 7 | | * | P | EA | 1 | C344 | 31-Aug-81 | | | |
| 003 | 6 | 520-0060 | 1A | CONN,HOUSING,PIN,2P | RP | P | 1 | | * | P | EA | 1 | C781 | 31-Aug-81 | | | |
| 006 | 6 | 520-0080 | 1A | CONN,COVER,IDC,5P,.156 CTR | RP | P | 1 | | * | U | EA | 1 | C781 | 31-Aug-81 | | | |
| 005 | 6 | 520-0081 | 1A | CONN,COVER,IDC,18P,.156 CTR | RP | P | 1 | | * | U | EA | 1 | C781 | 31-Aug-81 | | | |
| 013 | 6 | 525-0015 | 1A | CONN,PLUG,KEYING | RP | P | 1 | | * | U | EA | 1 | C781 | 31-Aug-81 | | | |
| 008 | 6 | 550-0010 | A | TUBING, BRAIDED, 1/8 DIA. | EX | X | 7 | | * | U | IN | 5 | P109 | 31-Aug-81 | | | |
| 010 | 6 | 550-0011 | A | TUBING, BRAIDED, 1/4 DIA. | EX | X | 7 | | * | U | IN | 12.7500 | P109 | 31-Aug-81 | | | |
| 011 | 6 | 550-0101 | 1C | TUBING, HEAT SHRINK 1/4 ID BLACK | EX | X | 7 | P | C | P | FT | 2 | C503 | 31-Aug-81 | | | |
| 012 | 6 | 550-0104 | 1C | TUBING, HEAT SHRINK 3/8 ID BLACK | EX | X | 7 | P | C | P | FT | 4 | C503 | 31-Aug-81 | | | |
| 014 | 6 | 561-1800 | B | WIRE, 18 AWG, BLACK, 7 X 26 | EX | X | 7 | S | C | P | FT | 2.3000 | 764 | 31-Aug-81 | | | |
| 018 | 6 | 561-1822 | B | WIRE, 18 AWG, RED, 7 X 26 | EX | X | 7 | | * | U | FT | 0.5000 | C018 | 31-Aug-81 | | | |
| 009 | 6 | 561-1855 | B | WIRE, 18 AWG, GREEN, 7 X 26 | EX | X | 7 | | * | U | FT | 1.1700 | C018 | 31-Aug-81 | | | |
| 017 | 6 | 561-1866 | B | WIRE, 18 AWG, BLUE, 7 X 26 | EX | X | 7 | | * | U | FT | 1.1700 | C018 | 31-Aug-81 | | | |
| 016 | 6 | 561-1877 | B | WIRE, 18 AWG, VIOLET, 7 X 26 | EX | X | 7 | | * | U | FT | 0.6300 | C018 | 31-Aug-81 | | | |
| 015 | 6 | 561-1899 | B | WIRE, 18 AWG, WHITE, 7 X 26 | EX | X | 7 | | * | U | FT | 1.7000 | C018 | 31-Aug-81 | | | |
| 013 | 5 | 656-4106 | A | ASSY, PCB TESTED, MONITOR, PROFIL | | A | * | | * | P | EA | 1 | P109 | 31-Aug-81 | | 01-Mar-82 | |
| 001 | 6 | 656-0106 | A | ASSY, PCB UNTSTD, MONITOR, PROFIL | WU | A | 1 | | * | P | EA | 1 | P109 | 31-Aug-81 | | | |
| 002 | 7 | 101-2473 | 1A | RES 47K OHM 1/2W 5% | RP | P | 1 | S | C | P | EA | 1 | C675 | 31-Aug-81 | | | |
| 003 | 7 | 101-2560 | 1A | RES 56 OHM 1/2W 5% | RP | P | 1 | | * | P | EA | 1 | C675 | 31-Aug-81 | | | |
| 005 | 7 | 101-4103 | 1A | RES 10K OHM 1/4W 5% | RP | P | 1 | P | C | P | EA | 1 | C675 | 31-Aug-81 | | | |
| 008 | [illegible] | 101-4104 | 1A | RES 100K OHM 1/4W 5% | RP | P | 1 | P | C | P | EA | 3 | C675 | 31-Aug-81 | | | |
| 006 | [illegible] | 101-4183 | 1A | RES 18K OHM 1/4W 5% | RP | P | 1 | P | C | P | EA | 1 | C675 | 31-Aug-81 | | | |
| 004 | [illegible] | 101-[illegible] | 1A | RES [illegible] OHM 1/4W 5% | RP | P | 1 | P | C | P | EA | 1 | C675 | 31-Aug-81 | | | |
| 007 | [illegible] | 101-4333 | 1A | RES 33K OHM 1/4W 5% | RP | P | 5 | P | C | P | EA | 1 | C675 | 31-Aug-81 | | | |
| 01[illegible] | [illegible] | [illegible] | 1B | CAP TANT [illegible] uF 20% 15/16V | RP | P | 1 | | * | P | EA | 2 | C599 | 31-Aug-81 | | | |
| [illegible] | [illegible] | [illegible] | 1B | CAP TANT [illegible] uF 20% 15/16V | RP | P | 1 | | * | P | EA | 1 | C599 | 31-A[illegible] | | | |

EFFECTIVITY DATE: AL

I N D E N T E D B I L L S O F M A T E R I A L

PARENT PART: A3M0305 3 PROFILE FOR APPLE /// UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
ERC: B SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION REMARKS | PR CD | S C | T Y | S P | A B | P L | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 012 | 7 | 327-0011 | A | TRANSISTOR,NPN,OPTICALLY COUPLED | RI | P | 1 | | * | P | EA | 1 | P109 | 31-Aug-81 | | | |
| 013 | 7 | 353-8212 | A | VOLTAGE DETECTOR/INDICATOR 8 PIN | RI | P | 1 | | * | P | EA | 1 | P109 | 31-Aug-81 | | | |
| 015 | 7 | 371-4150 | 1A | DIODE SWITCHING 1N4152 500MA 50V | RP | P | 1 | P | C | P | EA | 2 | C714 | 31-Aug-81 | | | |
| 014 | 7 | 371-5240 | 1B | DIODE ZENER 1N5240B 500mW 10V | RP | P | 1 | | * | P | EA | 1 | C727 | 31-Aug-81 | | | |
| 011 | 7 | 372-3904 | A | TRANSISTOR,NPN SW.&AMP. 2N3904 | RP | P | 1 | P | C | P | EA | 2 | C303 | 31-Aug-81 | | | |
| 001 | 7 | 820-0058 | A | PCB, MONITOR PROFILE | RP | P | 1 | | * | P | EA | 1 | P109 | 31-Aug-81 | | | |
| 001 | 5 | 699-0059 | AB | PURCH. ASSY, POWER SUPPLY PROFILE | VX | P | 1 | | A | P | EA | 1 | P181 | 31-Aug-81 | | 13-Dec-82 | |
| 003 | 5 | 705-0010 | B | SWITCH, ROCKER SPST W/ON-OFF LEGE | RP | P | 1 | P | C | P | EA | 1 | 783 | 31-Aug-81 | | 01-Mar-82 | |
| 007 | 5 | 805-0090 | B | HOUSING, PWR SPLY, PROFILE | RP | P | 1 | | * | P | EA | 1 | P143 | 31-Aug-81 | | 01-Mar-82 | |
| 008 | 5 | 805-0091 | B | COVER, TOP, PWR SUPPLY, PROFILE | RP | P | 1 | | * | P | EA | 1 | P168 | 31-Aug-81 | | 01-Mar-82 | |
| 014 | 5 | 805-0092 | A | BRACKET, MONITOR, PROFILE | RP | P | 1 | | * | P | EA | 2 | P106 | 31-Aug-81 | | 01-Mar-82 | |
| 019 | 5 | 805-0096 | A | INSULATOR, POWER SUPPLY | RP | P | 1 | | * | P | EA | 1 | P109 | 31-Aug-81 | | 01-Mar-82 | |
| 020 | 5 | 825-0320 | A | LABEL, WARNING PWR SUP PROFILE | EX | P | 7 | | * | P | E | 1 | P109 | 31-Aug-81 | | 01-Mar-82 | |
| 006 | 5 | 835-0151 | A | NUT/WASHER ASSY, (KEPS) 6-32 | EX | P | 7 | | * | P | EA | 2 | 834 | 31-Aug-81 | | 01-Mar-82 | |
| 015 | 5 | 860-0210 | MA | STANDOFF, HEX 6-32 X 1/4 | EX | P | 7 | | * | P | EA | 1 | P109 | 31-Aug-81 | | 01-Mar-82 | |
| 006 | 4 | 805-0088 | 1C | SUBPANEL, REAR, PROFILE | RP | P | 1 | | * | P | EA | 1 | P526 | 31-Aug-81 | | 13-Dec-82 | |
| 030 | 4 | 805-0104 | A | SUPPORT, PROFILE | RP | P | 1 | | * | P | EA | 1 | P168 | 01-Feb-82 | | 13-Dec-82 | |
| 007 | 4 | 810-0090 | 1A | DRESS PANEL, DRIVE, PROFILE | RM | P | 1 | | * | P | EA | 1 | P567 | 31-Aug-81 | | 13-Dec-82 | |
| 008 | 4 | 810-0091 | 1B | DRESS PANEL, PWR SPLY PROFILE | RM | P | 1 | | * | P | EA | 1 | P644 | 31-Aug-81 | | 13-Dec-82 | |
| 009 | 4 | 810-0092 | B | COVER,DRIVE,BOTTOM,PROFILE | RM | P | 1 | | * | P | EA | 1 | P168 | 31-Aug-81 | | 13-Dec-82 | |
| 004 | 4 | 815-5007 | 1C | COVER, TOP, PROFILE | RM | P | 1 | | * | P | EA | 1 | P408 | 31-Aug-81 | | 13-Dec-82 | |
| 005 | 4 | 815-5008 | 1C | COVER, BOTTOM, PROFILE | RM | P | 1 | | * | P | EA | 1 | P408 | 31-Aug-81 | | 13-Dec-82 | |
| 023 | 4 | 825-0113 | 1B | LABEL,CAUTION PROFILE/DUOFILE | EX | P | 7 | | * | P | EA | 1 | P461 | 31-Aug-81 | | 13-Dec-82 | |
| 019 | 4 | 825-0114 | 1E | LABEL, PROFILE MODEL & SERIAL NO. | EX | P | 7 | | * | P | EA | 1 | P631 | 31-Aug-81 | | 13-Dec-82 | |
| 027 | 4 | 825-0207 | B | LABEL, FCC NON COMPLIANCE APPLE 3 | EX | X | 7 | P | C | P | EA | 1 | P593 | 31-Aug-81 | | 13-Dec-82 | |
| 016 | 4 | 825-0311 | 1B | LABEL, LOGO 16MM BY 16MM | EX | X | 7 | P | C | P | EA | 1 | P514 | 31-Aug-81 | | 13-Dec-82 | |
| 017 | 4 | 825-0313 | 1B | LABEL, NAMEPLATE, PROFILE | EX | P | 7 | | * | P | EA | 1 | P514 | 31-Aug-81 | | 13-Dec-82 | |
| 018 | 4 | 825-0315 | 1C | LABEL, LED PROFILE | EX | P | 7 | | * | P | EA | 1 | P514 | 31-Aug-81 | | 13-Dec-82 | |
| 028 | 4 | 825-0316 | AA | INACT,LBL 120 VAC .8 AMP UL PWR S | EX | P | 7 | | * | P | EA | 1 | P197 | 31-Aug-81 | | 09-May-82 | |
| 032 | 4 | 825-0320 | A | LABEL, WARNING PWR SUP PROFILE | EX | P | 7 | | * | P | E | 1 | P109 | 01-Mar-82 | | 13-Dec-82 | |
| 029 | 4 | 825-0329 | A | LABEL, SERIAL NUMBER | EX | P | 7 | | * | P | EA | 1 | P124 | 16-Nov-81 | | 13-Dec-82 | |
| 034 | 4 | 830-0025 | 3A | INACTIVE,REIDENTIFIED SEE 830-002 | | X | * | | * | P | EA | 2 | C611 | 20-May-82 | | 13-Dec-82 | |
| 013 | 4 | 835-0005 | 1B | NUT, SPEED 'J' TYPE SIZE 8 | EX | X | 7 | P | C | P | EA | 3 | C744 | 31-Aug-81 | | 13-Dec-82 | |
| 020 | 4 | 860-0200 | 1C | STANDOFF, PLASTIC .188" | EX | P | 7 | | C | P | EA | 5 | C520 | 31-Aug-81 | | 13-Dec-82 | |
| 031 | 4 | 860-0210 | MA | STANDOFF, HEX 6-32 X 1/4 | EX | P | 7 | | * | P | EA | 1 | P109 | 01-Mar-82 | | 13-Dec-82 | |
| 015 | 4 | 865-0005 | MA | FOOT, .52HT, SQ | EX | X | 7 | P | C | P | EA | 6 | 545 | 31-Aug-81 | | 13-Dec-82 | |
| 008 | 3 | 825-0116 | C | LABEL, INDIVIDUAL CARTON PROFILE | EX | P | 7 | | * | P | EA | 1 | P284 | 31-Aug-81 | | 13-Dec-82 | |
| 011 | 3 | 825-0207 | B | LABEL, FCC NON COMPLIANCE APPLE 3 | EX | X | 7 | P | C | P | EA | 1 | P593 | 31-Aug-81 | | 13-Dec-82 | |
| 010 | 3 | 825-0317 | A | LABEL, FRAGILE, PROFILE | EX | P | 7 | | * | P | EA | 4 | P112 | 31-Aug-81 | | 13-Dec-82 | |
| 015 | 3 | 825-0328 | A | LABEL, DO NOT REMOVE END CAPS | EX | P | 7 | | * | P | EA | 1 | P125 | 19-Oct-81 | | 13-Dec-82 | |
| 016 | 3 | 825-0329 | A | LABEL, SERIAL NUMBER | EX | P | 7 | | * | P | EA | 0.2000 | P124 | 19-Oct-81 | | 13-Dec-82 | |
| 020 | 3 | 942-0112 | A | INACTIVE, BAG, ANTI STAT 14 X 9 | EX | X | 7 | | C | P | EA | 2 | P125 | 31-Aug-81 | | 16-Oct-81 | |
| 003 | 3 | 942-0117 | 1C | BOX, 29.5 X 21.25 X 16.13, PROFIL | EX | X | 7 | | C | P | EA | 1 | P399 | 31-Aug-81 | | 13-Dec-82 | |
| 012 | 3 | 942-0142 | A | BOX, OFF 19.25 X 10.75 X 6.88 | FX | P | 7 | | * | P | EA | 1 | P125 | 19-Oct-81 | | 13-Dec-82 | |
| 019 | 3 | 944-00?? | A | INACTIVE,FOAM PAD TOP 16X9X6 | EX | X | 7 | | * | P | EA | 1 | P125 | 31-Aug-81 | | 16-Oct-81 | |
| 013 | 3 | [illegible] | [illegible] | TAPE, [illegible] 2 inch x 60 yard | FX | Y | 7 | P | C | P | RL | 0.0120 | D064 | 19-Oct-81 | | 13-Dec-82 | |
| 009 | 3 | [illegible] | A | TAPE, SEALING GLASS WFR #341 AJ | EX | X | 7 | P | B | P | RL | 0.0150 | 474 | 31-Aug-81 | | 13-Dec-82 | |
| 007 | 3 | 946-00?? | 1C | STRAPPING, POLYPRO 1/2 INCH | EX | X | 7 | | * | P | RL | 0.0004 | P722 | 19-Oct-81 | | 13-Dec-82 | |
| 002 | 2 | [illegible] 8119 | 2B | MANUAL,PROFILE FOR APPLE /// | | * | * | | A | * | EA | 1 | P354 | 14-Dec-82 | | 01-Sep-83 | |
| 004 | 2 | [illegible] | [illegible] | [illegible] END CAP | NS | A | 1 | | * | P | EA | 2 | P125 | 14-Dec-82 | | 01-Sep-83 | |

EFFECTIVITY DATE: ALL

ENGINEERED BILLS OF MATERIAL

PARENT PART: A3M0305 3 PROFILE FOR APPLE /// UM: EA PROD CODE: DH ECN: F354 ASSEMBLY QTY: 1
ERC: B SECF CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E F | PART DESCRIPTION / REMARKS | FR CD / S C / T Y / S P / A B / P L / UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 012 | 3 | 600-2516 | B | ASSY, END CAP, PROFILE | WS A 1 * P EA | 2 | P56814 | -Dec-82 | | 01-Sep-83 | |
| 005 | 3 | 600-2517 | A | ASSY., TOP/BOTTOM PAD, PROFILE | * * * * EA | 2 | P26514 | -Dec-82 | | 01-Sep-83 | |
| 001 | 3 | 656-6110 | 3F | INACT.MFG.ASSY,CHASSIS,PROFILE | * * * * EA | 1 | L30514 | -Dec-82 | | 01-Sep-83 | |
| 003 | 4 | 400-1604 | 1C | SCR 6-32X1/4 FN HD CRS REC STL ZN | EX X 7 C P EA | 8 | C54014 | -Dec-82 | | 30-Aug-83 | |
| 008 | 4 | 400-1606 | 1C | SCR 6-32X3/8 FN HD CRS REC STL ZN | EX X 1 P C P EA | 8 | C54001 | -Jun-83 | | 30-Aug-83 | |
| 004 | 4 | 400-1608 | 1C | SCR 6-32X1/2 FN HD CRS REC STL ZN | EX X 7 C P EA | 4 | C54014 | -Dec-82 | | 31-May-83 | |
| 013 | 4 | 403-1606 | 1C | SCR 6-32X3/8 FN CRS REC STL BL ZI | EX X 7 S C U EA | 16 | C54031 | -Aug-83 | | | |
| 009 | 4 | 430-1001 | 1C | SCR TAP 8-18X.437 PN CRS STL ZN | EX X 7 P C P EA | 3 | C54014 | -Dec-82 | | | |
| 011 | 4 | 590-0046 | 1B | CABLE, ASSY, I/O PROFILE | RC P 1 * P EA | 1 | P60314 | -Dec-82 | | 14-Apr-83 | |
| 001 | 5 | 519-0110 | 1A | CONN,"D",IDC,25P,W/O SR | RP P 1 * U EA | 2 | C78131 | -Aug-81 | | | |
| 002 | 5 | 569-0203 | 1B | CABLE, FLAT 25 CONDUCTOR | * * * * FT | 3.2500 | C52301 | -Oct-83 | | | |
| 003 | 5 | 590-0052 | 3A | REIDENTIFY SEE 569-0203 | RC P 1 * P FT | 3.2500 | C52331 | -Aug-81 | | 30-Sep-83 | |
| 010 | 4 | 656-4103 | A | ASSY, PCB TSTD, I/O PROFILE A3 | WT A 1 * P EA | 1 | P11314 | -Dec-82 | | 14-Apr-83 | |
| 001 | 5 | 656-0103 | 1F | ASSY, PCB UNTSTD, I/O PROFILE, A3 | WU A 1 * P EA | 1 | P78131 | -Aug-81 | | | |
| 000 | 6 | 050-5007 | 1B | SCHEMATIC, I/O CARD, PROFILE | D D 7 * U EA | 1 | P65104 | -Jan-82 | | | |
| 015 | 6 | 101-4103 | 1A | RES 10K OHM 1/4W 5% | RP P 1 P C P EA | 3 | C67531 | -Jul-81 | | | |
| | | | | R4,5,7 | | | | | | | |
| 014 | 6 | 101-4332 | 1A | RES 3.3K OHM 1/4W 5% | RP P 1 P C P EA | 3 | C67531 | -Jul-81 | | | |
| | | | | R1,3,6 | | | | | | | |
| 029 | 6 | 101-4751 | 1A | RES 750 OHM 1/4W 5% | RP P 1 C P EA | 1 | C67513 | -Nov-81 | | | |
| | | | | R2 | | | | | | | |
| 034 | 6 | 112-0102 | 1B | RES ARRAY 8 X 47 OHM 10% | RP P 1 P C P EA | 2 | C67531 | -Aug-81 | | 12-Nov-81 | |
| 021 | 6 | 112-0104 | 1B | RES ARRAY 7 X 470 OHM 5% | RP P 1 * P EA | 1 | C67531 | -Jul-81 | | | |
| | | | | B1 | | | | | | | |
| 013 | 6 | 112-0105 | 1B | RES ARRAY 8 X 330 OHM | RP P 1 * P EA | 2 | C67513 | -Nov-81 | | 06-Nov-83 | |
| | | | | A7,B7 | | | | | | | |
| 036 | 6 | 112-0107 | 1B | RES ARRAY 8 X 100 OHM | * * * * EA | 2 | C67507 | -Nov-83 | | | |
| | | | | A7,B7 | | | | | | | |
| 035 | 6 | 130-0003 | 1B | CAP CER AXIAL .1 UF +80%-20% 25V | RP P 1 P C P EA | 17 | C93913 | -Nov-81 | | 17-May-82 | |
| 016 | 6 | 130-0007 | 1B | CAP CER AXIAL .1 UF +80%-20% 25V | RP P 1 C P EA | 17 | C93918 | -May-82 | | | |
| | | | | C1-C17 | | | | | | | |
| 032 | 6 | 132-6101 | 1A | CAP CER 100 pF 20% 50V | RP P 1 P C P EA | 1 | C54113 | -Nov-81 | | | |
| | | | | C18 | | | | | | | |
| 031 | 6 | 159-0009 | A | BEAD, FERRITE | RP P 1 P C P EA | 1 | DC6213 | -Nov-81 | | | |
| | | | | L1 | | | | | | | |
| 003 | 6 | 301-0038 | A | IC, 7438 | RI P 1 P C P EA | 1 | C06313 | -Nov-81 | | | |
| | | | | B3 | | | | | | | |
| 028 | 6 | 301-0259 | A | IC, 74259 | RI P 1 P C P EA | 0 | C06331 | -Jul-81 | | | |
| | | | | U13 | | | | | | | |
| | | | | SUB P/N FOR ITEM 7 | | | | | | | |
| 007 | 6 | 301-9334 | A | IC, 9334 | RI P 1 P C P EA | 1 | C06331 | -Jul-81 | | | |
| | | | | C3 | | | | | | | |
| | | | | SUB P/N 301-0259 | | | | | | | |
| | | | | ITEM 28 | | | | | | | |
| 004 | 6 | 305-0010 | A | IC, 74LS10 | RI P 1 P B P EA | 1 | 44. | 31-Jul-81 | | | |
| | | | | [illegible] | | | | | | | |
| [illegible] | [illegible] | [illegible] | [illegible] | 74LS14 | RI P 1 P B P EA | 2 | 44. | 31-Jul-81 | | | |
| | | | | A2,B4 | | | | | | | |
| [illegible] | [illegible] | [illegible] | A | 74LS38 QUAD 2 INPUT BUFFER | RI P 1 P B P EA | 1 | 649 | 31-Aug-81 | | 12 [illegible] | |
| [illegible] | | [illegible] | [illegible] | [illegible] | RI P 1 P B P EA | 1 | 4[illegible] | 31-Jul-81 | | | |

EFFECTIVITY DATE: ALL

# INDENTED BILLS OF MATERIAL

PARENT PART: A3M0305 3 PROFILE FOR APPLE /// UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
ERC: B SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S P | A B | P I | UM | EXTENDED QTY PER | ECN CHG / START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | B5 | | | | | | | | | | | | |
| 005 | 6 | 305-0125 | A | IC, 74LS125 | RI | P | 1 | P | B | P | EA | 1 | 442 31-Jul-81 | | | |
| | | | | C4 | | | | | | | | | | | | |
| 001 | 6 | 305-0132 | A | IC, 74LS132 | RI | P | 1 | P | B | P | EA | 1 | 442 31-Jul-81 | | | |
| | | | | A3 | | | | | | | | | | | | |
| 006 | 6 | 305-0138 | A | IC, 74LS138 | RI | P | 1 | P | B | P | EA | 1 | 442 31-Jul-81 | | | |
| | | | | C2 | | | | | | | | | | | | |
| 009 | 6 | 305-0244 | A | IC, 74LS244 | RI | P | 1 | P | B | P | EA | 1 | 442 31-Jul-81 | | | |
| | | | | A5 | | | | | | | | | | | | |
| 010 | 6 | 305-0280 | A | IC, 74LS280 9-BIT PARITY | RI | P | 1 | P | B | P | EA | 1 | 649 31-Jul-81 | | | |
| | | | | A4 | | | | | | | | | | | | |
| 011 | 6 | 305-0368 | A | IC, 74LS368 | RI | P | 1 | P | B | P | EA | 1 | 442 31-Jul-81 | | | |
| | | | | B6 | | | | | | | | | | | | |
| 008 | 6 | 305-0374 | A | IC, 74LS374 | RI | P | 1 | P | B | P | EA | 1 | 442 31-Jul-81 | | | |
| | | | | A6 | | | | | | | | | | | | |
| 026 | 6 | 400-1406 | 1C | SCR 4-40X3/8 PN HD CRS REC STL ZN | EX | X | 7 | P | C | P | EA | 2 | C54031-Jul-81 | | | |
| 022 | 6 | 511-1401 | C | SOCKET, IC 14 PIN | RP | P | 1 | P | C | P | EA | 8 | 799 31-Jul-81 | | | |
| 023 | 6 | 511-1601 | C | SOCKET, IC 16 PIN | RP | P | 1 | P | C | P | EA | 6 | 799 31-Jul-81 | | | |
| 024 | 6 | 511-2001 | C | SOCKET, IC 20 PIN | RP | P | 1 | P | C | P | EA | 2 | 799 31-Jul-81 | | | |
| 025 | 6 | 515-0005 | 1B | CONN,PIN,SINGLE | RP | P | 1 | P | C | P | EA | 2 | C78131-Jul-81 | | | |
| | | | | TP1,TP2 | | | | | | | | | | | | |
| 030 | 6 | 519-0100 | 1B | CONN,PC TAIL,90 DEG,MET,LNG FTPRI | RP | P | 1 | | * | P | EA | 1 | C78113-Nov-81 | | | |
| | | | | P1 | | | | | | | | | | | | |
| 018 | 6 | 520-0011 | 1A | CONN,PLUG,CONTACT KEY,'D' SUB | RP | P | 1 | | C | P | EA | 1 | C78131-Jul-81 | | | |
| | | | | P1 | | | | | | | | | | | | |
| 020 | 6 | 820-0056 | AC | PCB I/O, PROFILE, FOR A3 | RM | P | 1 | | * | P | EA | 1 | P13531-Jul-81 | | | |
| 027 | 6 | 835-0150 | A | NUT/WASHER ASSY, (KEPS) 4-40 | EX | P | 7 | | * | P | EA | 2 | 834 31-Jul-81 | | | |
| 002 | 4 | 656-5120 | 3D | INACT.MFG SUBASSY,BASE,PROFILE | | * | * | | * | * | EA | 1 | L30514-Dec-82 | | | |
| 005 | 5 | 400-1604 | 1C | SCR 6-32X1/4 PN HD CRS REC STL ZN | EX | X | 7 | | C | P | EA | 2 | C54014-Dec-82 | | | |
| 006 | 5 | 400-1606 | 1C | SCR 6-32X3/8 PN HD CRS REC STL ZN | EX | X | 1 | P | C | P | EA | 1 | C54001-Apr-83 | | 31-May-83 | |
| 011 | 5 | 400-1608 | 1C | SCR 6-32X1/2 PN HD CRS REC STL ZN | EX | X | 7 | | C | P | EA | 1 | C54001-Jun-83 | | | |
| 007 | 5 | 430-1006 | 1C | SCR TAP 4-20X.250 PN CRS REC STL | EX | X | 7 | | * | P | EA | 1 | C54014-Dec-82 | | 22-Jun-83 | |
| 012 | 5 | 136-1006 | 1C | SCR TAP 4-24X.250 PN CRS REC STL | | * | * | | * | * | EA | 1 | C54023-Jun-83 | | | |
| 001 | 5 | 656-5021 | 6A | SUBASSY COVER,BOTTOM,PROFILE | | * | * | | * | * | EA | 1 | P40801-Apr-83 | | | |
| 002 | 6 | 805-0086 | 1A | SHIELD,CSA PROFILE | | * | * | | * | * | EA | 1 | P40801-Apr-83 | | | |
| 001 | 6 | 815-5008 | 1C | COVER, BOTTOM, PROFILE | RM | P | 1 | | * | P | EA | 1 | P40801-Apr-83 | | | |
| 002 | 5 | 805-0088 | 1C | SUBPANEL, REAR, PROFILE | RP | P | 1 | | * | P | EA | 1 | P52614-Dec-82 | | | |
| 008 | 5 | 805-0104 | A | SUPPORT, PROFILE | RP | P | 1 | | * | P | EA | 1 | P16814-Dec-82 | | | |
| 010 | 5 | 810-0092 | B | COVER,DRIVE,BOTTOM,PROFILE | RM | P | 1 | | * | P | EA | 1 | P16814-Dec-82 | | 31-Mar-83 | |
| 003 | 5 | 810-0095 | 1A | COVER DRIVE,BOTTOM,PROFILE | | * | * | | * | * | EA | 1 | P40801-Apr-83 | | | |
| 009 | 5 | 815-5008 | 1C | COVER, BOTTOM, PROFILE | RM | P | 1 | | * | P | EA | 1 | P40814-Dec-82 | | 31-Mar-83 | |
| 004 | 5 | 865-0005 | MA | FOOT, .52HT, SQ | EX | X | 7 | P | C | P | EA | 6 | 545 14-Dec-82 | | | |
| 005 | 4 | 656-5130 | 3D | INACT.MFG SUBASSY,COVER,PROFILE | | * | * | | * | * | EA | 1 | L30514-Dec-82 | | | |
| 004 | 5 | 590-0047 | 1B | CABLE, ASSY, LED, PROFILE | RC | P | 1 | | * | P | EA | 1 | P46414-Dec-82 | | | |
| 008 | [illegible] | 517-0041 | 1A | CONN,RCPT,INSUL. DISPL.,20 | RP | P | 1 | | * | U | EA | 1 | C78131-Aug-81 | | | |
| 007 | [illegible] | 55[illegible]-001 | [illegible] | [illegible], BRAIDED, 1/8 DIA. | EX | X | 7 | | * | U | IN | 24.5000 | P1[illegible]31-Aug-81 | | | |
| [illegible] | [illegible] | [illegible] | 1[illegible] | [illegible], HEAT SHRINK 1/4 ID BLACK | EX | X | 7 | P | C | P | FT | [illegible] | [illegible]331-Aug-81 | | | |
| 006 | [illegible] | [illegible] | [illegible] | TUBING, HEAT SHRINK 1/16 ID BLACK | EX | X | 7 | P | C | P | FT | 1 | [illegible]331-Aug-81 | | | |
| 004 | [illegible] | [illegible] | [illegible] | WIRE, BLACK, 26 AWG, 7 x 34 | EX | X | 7 | P | * | U | FT | 25 | 764 31-Aug-81 | | | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | EX | X | 7 | | * | U | FT | 25 | [illegible]1831 Aug 81 | | | |

EFFECTIVITY DATE: ALL INDENTED BILLS OF MATERIAL

PARENT PART: A3M0305 3 PROFILE FOR APPLE /// UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
ERC: B SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E P | PART DESCRIPTION / REMARKS | RP CD S C I Y S P A B P L UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | 6 | 710-0004 | MA | LED, RED APPLE III DISKCABLE | RP X 1 P C P EA | 1 | 552 | 31-Aug-81 | | | |
| 002 | 6 | 815-0190 | 0 | GROMET, PANEL MTG, FOR RECT. LAMP | RM X 1 P C P EA | 0 | 442 | 31-Aug-81 | | 26-Apr-83 | |
| 001 | 5 | 699-5011 | 1B | PURCH ASSY,COATD TOP CVR,PRFLE-R | * * * * EA | 1 | L0511 | ?-Dec-83 | | | |
| 001 | 6 | 815-5007 | 1C | COVER, TOP, PROFILE | RM P 1 * P EA | 1 | P4081 | 2-Dec-83 | | | |
| 008 | 5 | 815-0190 | 0 | GROMET, PANEL MTG, FOR RECT. LAMP | RM X 1 P C P EA | 1 | 442 | 27-Apr-83 | | | |
| 009 | 5 | 815-5007 | 1C | COVER, TOP, PROFILE | RM P 1 * P EA | 0 | P408 | | | 11-Dec-83 | |
| 005 | 5 | 825-0311 | 1B | LABEL, LOGO 16MM BY 16MM | EX X 7 P C P EA | 1 | P5141 | 4-Dec-82 | | 15-Feb-83 | |
| 006 | 5 | 825-0313 | 1B | LABEL, NAMEPLATE, PROFILE | EX P 7 * P EA | 1 | P5141 | 4-Dec-82 | | 15-Feb-83 | |
| 007 | 5 | 825-0315 | 1C | LABEL, LED PROFILE | EX P 7 * P EA | 1 | P5141 | 4-Dec-82 | | 15-Feb-83 | |
| 003 | 5 | 830-0025 | 3A | INACTIVE,REIDENTIFIED SEE 830-002 | X * * P EA | 2 | C6111 | 4-Dec-82 | | | |
| 002 | 5 | 835-0005 | 1B | NUT, SPEED "U" TYPE SIZE 8 | EX X 7 P C P EA | 3 | C7441 | 4-Dec-82 | | | |
| 001 | 4 | 656-5150 | 3A | INACT.MFG SUBASY,HDA/PWR SUP,PROF | * * * * EA | 1 | L3051 | 4-Dec-82 | | | |
| 003 | 5 | 341-0171 | A | MICROPRCSR-2K PROG ROM FORR PROFI | * * * * EA | 1 | P2661 | 4-Dec-82 | | | |
| 001 | 5 | 656-5110 | 6C | MFG SUBASSY, POWER SUPPLY, PROFIL | * * * * EA | 1 | P5581 | 4-Dec-82 | | | |
| 007 | 6 | 400-1603 | 1C | SCR 6-32X3/16 PN HD CRS REC STL Z | EX P 7 * P EA | 1 | C5401 | 4-Dec-82 | | | |
| 006 | 6 | 656-4102 | MC | ASSY, PCB TSTD, CONTROLLER | WT A 1 * P EA | 1 | P2661 | 4-Dec-82 | | | |
| 002 | 7 | 337-8603 | B | IC SOCKET MICROPRO. W/24P PIGGYBA | RL P 1 * P EA | 1 | C1480 | 5-May-82 | | 14-Oct-82 | |
| | | | | U25 | | | | | | | |
| 001 | 7 | 656-0102 | 1M | ASSY,PCB,UNTSTD,CONTROLLER,PROFIL | WU A 1 * P EA | 1 | P6513 | 1-Aug-81 | | | |
| 000 | 8 | 050-5006 | 1E | SCHEMATIC, CONTROLLER BD, PROFILE | D D 7 * U EA | 0 | P6510 | 4-Jan-82 | | | |
| 063 | 8 | 101-4101 | 1A | RES 100 OHM 1/4W 5% | RP P 1 P C P EA | 2 | C6753 | 1-Aug-81 | | | |
| | | | | R20,R21 | | | | | | | |
| 038 | 8 | 101-4102 | 1A | RES 1K OHM 1/4W 5% | RP P 1 P C P EA | 1 | C6753 | 1-Aug-81 | | 14-Oct-83 | |
| | | | | R15 | | | | | | | |
| 016 | 8 | 101-4103 | 1A | RES 10K OHM 1/4W 5% | RP P 1 P C P EA | 1 | C6753 | 1-Aug-81 | | | |
| | | | | R19 | | | | | | | |
| 036 | 8 | 101-4152 | 1A | RES 1.5K OHM 1/4W 5% | RP P 1 P C P EA | 2 | C6753 | 1-Aug-81 | | | |
| | | | | R9,R10 | | | | | | | |
| 040 | 8 | 101-4201 | 1A | RES 200 OHM 1/4W 5% | RP P 1 P C P EA | 1 | C6753 | 1-Aug-81 | | | |
| | | | | R17 | | | | | | | |
| 042 | 8 | 101-4303 | 1A | RES 30K OHM 1/4W 5% | RP P 1 P C P EA | 4 | C6752 | 5-Mar-83 | | | |
| | | | | R1,R2,R4,R5 | | | | | | | |
| 037 | 8 | 101-4332 | 1A | RES 3.3K OHM 1/4W 5% | RP P 1 P C P EA | 8 | C6753 | 1-Aug-81 | | | |
| | | | | R3,R6,R7,R8, | | | | | | | |
| | | | | R11,R12,R13,R18 | | | | | | | |
| 075 | 8 | 101-4333 | 1A | RES 33K OHM 1/4W 5% | RP P 5 P C P EA | 4 | C675 | | | 24-Mar-83 | |
| | | | | R1,R2,R4,R5 | | | | | | | |
| 039 | 8 | 101-4392 | 1A | RES 3.9K OHM 1/4W 5% | RP P 1 P C P EA | 1 | C6753 | 1-Aug-81 | | 14-Oct-83 | |
| | | | | R14 | | | | | | | |
| 041 | 8 | 101-4510 | 1A | RES 51 OHM 1/4W 5% | RP P 1 P C P EA | 1 | C6753 | 1-Aug-81 | | | |
| | | | | R16 | | | | | | | |
| 077 | 8 | 101-451 | | $$HLPQ*HML)$ | | | | | | | |
| | | | | * | | | | | | | |
| | | | | ES S$S$$HH | RP P 1 P C P EA | 1 | C6752 | 5-Mar-83 | | | |
| | | | | R[illegible] | | | | | | | |
| 0?5 | 8 | 11?-?021 | 1A | RES NETWORK [illegible] OHM [illegible] | RP P 1 P C P EA | 1 | C?753 | 1-Aug-81 | | | |
| 074 | [illegible] | 11?-?0?? | 1A | RES NETWORK [illegible] OHM 5% | RP P 1 P C P EA | 1 | C6753 | 1-Aug-81 | | | |
| [illegible] | | [illegible] | [illegible] | [illegible] OHM 10% | RP P [illegible] P EA | [illegible] | [illegible] 531 | Au[illegible] | | [illegible] | |

EFFECTIVITY DATE: ALL

# I N D E N T E D   B I L L S   O F   M A T E R I A L

PARENT PART: A3M0305 PROFILE FOR APPLE /// UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
REV: 1 SRT CODE: 6 TYPE: 1 ABC: * PLAN CODE: P DATE: 15 Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION / REMARKS | PR CH | S C | T Y | S P | A B | P L | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 081 | 8 | 112-0107 | 1B | RES ARRAY 8 X 100 OHM<br>U1,U2 | | * | * | | * | * | EA | 2 | C675 | 07-Nov-83 | | | |
| 043 | 8 | 125-5701 | 1B | CAP ELECT 47 uF -10%+75% 10V<br>C8,C21,C29,C30 | RP | P | 1 | | C | P | EA | 4 | C772 | 31-Aug-81 | | | |
| 045 | 8 | 130-0007 | 1B | CAP CER AXIAL .1 UF +80%-20% 25V | RP | P | 1 | | C | P | EA | 31 | C939 | 07-Apr-83 | | | |
| 032 | 8 | 197-0017 | A | CRYSTAL, 10MHz | EX | P | 7 | | * | P | EA | 1 | 792 | 31-Aug-81 | | 14-Oct-83 | |
| 078 | 8 | 197-0502 | 1A | CLOCK OSC,CRYSTAL 10 MHz (TTL) | | * | * | | * | * | EA | 1 | C576 | 15-Oct-83 | | | |
| 080 | 8 | 197-0504 | 1A | CLOCK OSCILLATOR,CRYSTAL,10 MHz<br>ALT FOR ITEM 78<br>ALT QTY 1 | | * | * | | * | * | EA | 0 | C584 | 16-Oct-83 | | | |
| 029 | 8 | 301-0006 | A | IC, 7406<br>U41 | EX | P | 7 | | * | P | EA | 1 | C063 | 31-Aug-81 | | | |
| 009 | 8 | 305-0000 | A | IC, 74LS00N<br>U15,U26 | RI | P | 1 | P | B | P | EA | 2 | 442 | 31-Aug-81 | | | |
| 026 | 8 | 305-0002 | A | IC, 74LS02N<br>U31 | RI | P | 1 | P | B | P | EA | 1 | 442 | 31-Aug-81 | | | |
| 025 | 8 | 305-0008 | A | IC, 74LS08<br>U32 | RI | P | 1 | P | B | P | EA | 1 | 442 | 31-Aug-81 | | | |
| 017 | 8 | 305-0014 | A | IC, 74LS14<br>U23 | RI | P | 1 | P | B | P | EA | 1 | 442 | 31-Aug-81 | | | |
| 027 | 8 | 305-0038 | A | IC, 74LS38 QUAD 2 INPUT BUFFER<br>U24 | RI | P | 1 | P | B | P | EA | 1 | 649 | 31-Aug-81 | | | |
| 019 | 8 | 305-0109 | A | IC, 74LS109<br>U36 | RI | P | 1 | P | B | P | EA | 1 | 442 | 31-Aug-81 | | | |
| 014 | 8 | 305-0153 | A | IC, 74LS153<br>U6 | RI | P | 1 | P | B | P | EA | 1 | 442 | 31-Aug-81 | | | |
| 006 | 8 | 305-0161 | A | IC, 74LS161<br>U10,U16,U17 | RI | P | 1 | P | B | P | EA | 3 | 442 | 31-Aug-81 | | | |
| 020 | 8 | 305-0163 | A | IC, 74LS163<br>U22 | RI | P | 1 | P | B | P | EA | 1 | 442 | 31-Aug-81 | | | |
| 013 | 8 | 305-0174 | A | IC, 74LS174<br>U30,U34,U38 | RI | P | 1 | P | B | P | EA | 3 | 442 | 31-Aug-81 | | | |
| 003 | 8 | 305-0240 | A | IC, 74LS240<br>U9 | RI | P | 1 | | B | P | EA | 1 | C127 | 31-Aug-81 | | | |
| 002 | 8 | 305-0244 | A | IC, 74LS244<br>U4,U5 | RI | P | 1 | P | B | P | EA | 2 | 442 | 31-Aug-81 | | | |
| 010 | 8 | 305-0257 | A | IC, 74LS257<br>U13,U20 | RI | P | 1 | P | B | P | EA | 2 | 442 | 31-Aug-81 | | | |
| 030 | 8 | 305-0280 | A | IC, 74LS280 9-BIT PARITY<br>U3 | RI | P | 1 | P | B | P | EA | 1 | 649 | 31-Aug-81 | | | |
| 015 | 8 | 305-0323 | A | IC, 74LS323<br>U14 | RI | P | 1 | P | B | P | EA | 1 | 442 | 31-Aug-81 | | | |
| 047 | [illegible] | 305-0377 | A | IC, 74LS[illegible]<br>[illegible] | RI | P | 1 | P | B | P | EA | 1 | 442 | 31-Aug-81 | | | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible]<br>[illegible] | RI | P | 1 | P | B | P | EA | 1 | C063 | [illegible] | | | |
| 011 | [illegible] | [illegible] | A | IC, [illegible]<br>[illegible] | RI | P | 1 | P | B | P | EA | 1 | C063 | 31-Aug-81 | | | |

EFFECTIVITY DATE: ALL

INDENTED BILLS OF MATERIAL

PARENT PART: A3M0305    A  PROFILE FOR APPLE ///    UM: EA    PROD CODE: DH    ECN: P354    ASSEMBLY QTY: 1
LRC: R    SPEC CODE: S    TYPE: 1    ABC: A    PLAN CODE: P    DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | F R | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S P | A R | P L | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 000 | 9 | 062-0083 | 1F | SPEC, 2114 RAM BURN-IN | EX | D | 7 | | * | U | EA | 0 | C314 | 15-Jul-83 | | | |
| 001 | 9 | 333-2114 | 1F | IC 1024 X 4 STATIC RAM 2114 | RL | P | 1 | | C | P | EA | 2 | C437 | 15-Jul-83 | | | |
| 073 | 8 | 335-0004 | A | PROM, 512 X 8 (UNPROGRAMMED) | RL | P | 1 | P | C | P | EA | 1 | C021 | 31-Aug-81 | | 12-Nov-81 | |
| 071 | 8 | 335-0006 | A | PROG OCT 16 INPT AND-OR-INVT GT A | RL | P | 1 | P | B | P | EA | 1 | 642 | 31-Aug-81 | | 12-Nov-81 | |
| 072 | 8 | 335-6309 | A | PROM, MMI 6309-1 | RL | P | 1 | P | C | P | EA | 1 | C-6 | 31-Aug-81 | | 12-Nov-81 | |
| 012 | 8 | 337-8253 | MA | PROGRAMMABLE INTERVAL TIMER | RL | P | 1 | P | A | P | EA | 1 | 642 | 31-Aug-81 | | | |
| | | | | U33 | | | | | | | | | | | | | |
| 004 | 8 | 337-8603 | B | IC SOCKET MICROPRO. W/24P PIGGYBA | RL | P | 1 | | * | P | EA | 1 | C148 | 31-Aug-81 | | 04-May-82 | |
| | | | | U25 | | | | | | | | | | | | | |
| 018 | 8 | 337-9401 | A | CRC GENERATOR/CHECKER | RL | P | 1 | P | A | P | EA | 1 | 642 | 31-Aug-81 | | | |
| | | | | U35 | | | | | | | | | | | | | |
| 021 | 8 | 341-0066 | A | PROM, U29 | RL | A | 1 | | * | P | EA | 1 | P105 | 13-Nov-81 | | | |
| | | | | (MMI 6309-1) | | | | | | | | | | | | | |
| 022 | 8 | 341-0067 | A | PROM, U37 | RL | A | 1 | | * | P | EA | 1 | P105 | 13-Nov-81 | | | |
| 007 | 8 | 341-0068 | A | RAMPAL | RL | P | 1 | | * | P | EA | 1 | P105 | 13-Nov-81 | | | |
| | | | | U27 (OCT 16 INPT | | | | | | | | | | | | | |
| | | | | AND-OR-INVT GT ARY) | | | | | | | | | | | | | |
| 031 | 8 | 341-0080 | B | PROG PROM 2K PROFILE CONTROLLER | RL | P | 1 | | * | P | EA | 1 | P184 | 13-Nov-81 | | 04-May-82 | |
| 074 | 8 | 341-0129 | A | EPROM-FIRMWARE 3.90 Z8 PROFILE-27 | RL | A | 1 | | * | P | EA | 1 | P110 | 31-Aug-81 | | 12-Nov-81 | |
| 001 | 9 | 335-2716 | A | EPROM, 2048 X 8 2716 | RL | P | 1 | P | C | P | EA | 1 | 642 | 31-Aug-81 | | | |
| 028 | 8 | 351-2074 | A | QUAD DARLINGTON XSTR ARRAY 2074B | RP | P | 1 | P | B | P | EA | 2 | 642 | 31-Aug-81 | | | |
| | | | | U7,U8 | | | | | | | | | | | | | |
| 023 | 8 | 359-4024 | A | VOLTAGE CONTROLLED MULTIVIBRATOR | RI | P | 1 | P | B | P | EA | 1 | 642 | 31-Aug-81 | | 14-Oct-83 | |
| | | | | U40 | | | | | | | | | | | | | |
| 033 | 8 | 371-4001 | 1A | DIODE RECTIFIER 1N4001 1.0A 50V | RP | P | 1 | P | C | P | EA | 8 | C599 | 31-Aug-81 | | | |
| | | | | CR1-CR8 | | | | | | | | | | | | | |
| 076 | 8 | 371-4128 | 1A | DIODE ZENER 1N4128 250mW 60V | RP | P | 1 | | * | P | EA | 4 | C538 | 31-Aug-81 | | 12-Nov-81 | |
| 064 | 8 | 371-4148 | A | DIODE FAST SWITCH 1N4148 200mA 75 | RP | P | 1 | P | C | P | EA | 4 | C538 | 13-Nov-81 | | | |
| | | | | CR9-CR12 | | | | | | | | | | | | | |
| 062 | 8 | 400-1406 | 1C | SCR 4-40X3/8 PN HD CRS REC STL ZN | EX | X | 7 | P | C | P | EA | 2 | C540 | 31-Aug-81 | | | |
| 055 | 8 | 511-1401 | C | SOCKET, IC 14 PIN | RP | P | 1 | P | C | P | EA | 3 | 799 | 07-Apr-83 | | | |
| 056 | 8 | 511-1601 | C | SOCKET, IC 16 PIN | RP | P | 1 | P | C | P | EA | 11 | 799 | 31-Aug-81 | | | |
| 057 | 8 | 511-1801 | C | SOCKET, IC 18 PIN | RP | P | 1 | P | C | P | EA | 2 | 799 | 31-Aug-81 | | | |
| 058 | 8 | 511-2001 | C | SOCKET, IC 20 PIN | RP | P | 1 | P | C | P | EA | 7 | 799 | 31-Aug-81 | | | |
| 059 | 8 | 511-2401 | C | SOCKET, IC 24 PIN | RP | P | 1 | P | C | P | EA | 1 | 799 | 31-Aug-81 | | | |
| 060 | 8 | 511-4001 | C | SOCKET, IC 40 PIN | RP | P | 1 | P | C | P | EA | 1 | 799 | 31-Aug-81 | | | |
| 061 | 8 | 515-0005 | 1R | CONN,PIN,SINGLE | RP | P | 1 | P | C | P | EA | 9 | C781 | 31-Aug-81 | | | |
| 054 | 8 | 515-0054 | 1C | CONN,HDR,STR,2F | RP | P | 1 | P | C | P | EA | 1 | C781 | 31-Aug-81 | | | |
| | | | | P7 | | | | | | | | | | | | | |
| 053 | 8 | 515-0082 | 1A | HEADER, 10 PIN RT ANGLE W/O EARS | RP | P | 1 | | C | P | EA | 1 | C480 | 31-Aug-81 | | 16-Nov-82 | |
| | | | | P5 | | | | | | | | | | | | | |
| 066 | 8 | 515-0150 | 1A | CONN,HDR,RT ANG,SP,.156 CTR,W/LNG | RP | P | 1 | | * | P | EA | 1 | C781 | 13-Nov-81 | | | |
| | | | | P3 | | | | | | | | | | | | | |
| [illegible] | [illegible] | 515-016[illegible] | 1A | CONN,HDR,RT ANG,[illegible],W/LNG RAMP | RP | P | 1 | | * | P | EA | 1 | C781 | 13-Nov-81 | | | |
| | | | | P3 | | | | | | | | | | | | | |
| 065 | 8 | 515-01[illegible] | 1F | CONN,PC TAIL,[illegible],MET,LNG FTPRI | RP | P | 1 | | * | P | EA | 1 | C781 | 13-Nov-81 | | | |
| | | | | P1 | | | | | | | | | | | | | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | P | 1 | | [illegible] | [illegible] | EA | 1 | C781 | [illegible]-Aug-81 | | | |

PRINTED 15-Oct-84 08:35 CUPERTINO OPERATIONS (DIV. 02) BIL VERSION 11-FEB 83 PAGE 18

EFFECTIVITY DATE: ALL

# I N D E N T E D B I L L S O F M A T E R I A L

PARENT PART: A3M0305 PROFILE FOR APPLE /// UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
LEC: B SELF CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | F R | PART DESCRIPTION / REMARKS | FR CD | S C | T Y | S P | A B | P L | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 068 | 8 | 571-0001 | A | WIRE, BUS BAR, 20 AWG, .5 IN. | EX | X | 7 | | * | U | FT | 1 | P232 | 13-Nov-81 | | 14-Oct-83 | |
| 046 | 8 | 820-0055 | 1D | PCB, CONTROLLER, PROFILE | RP | P | 1 | | * | P | EA | 1 | P176 | 31-Aug-81 | | | |
| 069 | 8 | 835-0150 | A | NUT/WASHER ASSY, (KEPS) 4-40 | EX | P | 7 | | * | P | EA | 2 | 834 | 13-Nov-81 | | | |
| 001 | 6 | 699-0059 | AB | PURCH. ASSY, POWER SUPPLY PROFILE | VX | P | 1 | | A | P | EA | 1 | P181 | 14-Dec-82 | | | |
| 005 | 6 | 825-0320 | A | LABEL, WARNING PWR SUP PROFILE | EX | P | 7 | | * | P | E | 1 | P109 | 14-Dec-82 | | | |
| 002 | 6 | 860-0200 | 1C | STANDOFF, PLASTIC .188" | EX | P | 7 | | C | P | EA | 5 | C520 | 14-Dec-82 | | | |
| 011 | 6 | 860-0210 | MA | STANDOFF, HEX 6-32 X 1/4 | EX | P | 7 | | * | P | EA | 0 | P109 | | | 06-Apr-83 | |
| 003 | 6 | 860-0213 | 1A | STANDOFF,6-32,5/16",METAL JACKNUT | | * | * | | * | * | EA | 1 | C325 | 30-Mar-83 | | | |
| 008 | 6 | 918-0023 | 0 | 1/4" TAN DOT<br>ALTN P/N FOR ITEM 4<br>ALTN QTY 1 | EX | X | 7 | S | C | U | EA | 0 | | 14-Dec-82 | | 16-Aug-83 | |
| 004 | 6 | 918-0025 | 0 | 1/4" RED DOT<br>ALTN P/N 918-0023<br>ALTN P/N 918-0029<br>ALTN P/N 918-0031 | EX | X | 7 | S | C | U | BX | 1 | | 14-Dec-82 | | 16-Aug-83 | |
| 009 | 6 | 918-0029 | 0 | 1/4" ORANGE DOT<br>ALTN P/N FOR ITEM 4<br>ALTN QTY 1 | EX | X | 7 | S | C | U | EA | 0 | | 14-Dec-82 | | 16-Aug-83 | |
| 010 | 6 | 918-0031 | 0 | 1/4" WHITE DOT<br>ALTN P/N FOR ITEM 4<br>ALTN QTY 1 | EX | X | 7 | S | C | U | EA | 0 | | 14-Dec-82 | | 16-Aug-83 | |
| ..002 | ..5 | 656-5140 | 3B | INACT.MFG.SUBASSY,H.D.A.,PROFILE | | * | * | | * | * | EA | 1 | L305 | 14-Dec-82 | | | |
| 005 | 6 | 400-1604 | 1C | SCR 6-32X1/4 PN HD CRS REC STL ZN | EX | X | 7 | | C | P | EA | 4 | C540 | 14-Dec-82 | | | |
| 004 | 6 | 590-0048 | 1B | CABLE, ASSY, CNTRLR TO ANALOG PCB | RC | P | 1 | | * | P | EA | 1 | P603 | 14-Dec-82 | | | |
| 001 | 7 | 513-0020 | 1B | CONN,CD EDG,IDC,17/34P,W/O EAR | RP | P | 1 | | * | U | EA | 1 | C781 | 31-Aug-81 | | | |
| 002 | 7 | 517-0035 | 1B | CONN,SKT,INSUL. DISPL.,17/34P | RP | P | 1 | | C | U | EA | 1 | C781 | 31-Aug-81 | | | |
| 003 | 7 | 569-0204 | 1B | CABLE, FLAT 34 CONDUCTOR | | * | * | | * | * | FT | 3.6200 | C523 | 01-Oct-83 | | | |
| 004 | 7 | 590-0053 | 3A | REIDENTIFY SEE 569-0204 | RC | P | 1 | | * | P | FT | 3.6200 | C523 | | | 30-Sep-83 | |
| 002 | 6 | 590-0105 | A | CABLE ASSY, #16 AWG GROUND WIRE | | P | * | | * | P | EA | 1 | P180 | 14-Dec-82 | | | |
| 003 | 7 | 517-1102 | 1B | TERMINAL, RING TONGUE #8 | | P | * | | * | P | EA | 1 | C344 | 01-Mar-82 | | | |
| 002 | 7 | 517-1211 | 1A | TERMINAL, RECEPT 4.75 X .51 TAB | | P | * | | * | P | EA | 1 | C628 | 01-Mar-82 | | | |
| 001 | 7 | 570-1601 | A | WIRE, 16 AWG, GRAY, 26/30, 4.80" | | X | * | | * | P | EA | 1 | C057 | 01-Mar-82 | | | |
| 003 | 6 | 656-4101 | A | ASSY, PCB TSTD, ANALOG | WT | A | 1 | | * | P | EA | 1 | P111 | 14-Dec-82 | | | |
| 001 | 7 | 656-0101 | 1P | ASSY, PCB UNTSTD, ANALOG, PROFILE | WU | A | 1 | | * | P | EA | 1 | L050 | 31-Aug-81 | | | |
| 000 | 8 | 050-5005 | 1J | SCHEMATIC, ANALOG BD, PROFILE | D | | D | 7 | * | U | EA | 0 | P697 | 01-Mar-82 | | | |
| 050 | 8 | 101-4010 | 1A | RES 1 OHM 1/4W 5%<br>R101 | RP | P | 1 | S | C | P | EA | 1 | C675 | 28-Jul-81 | | | |
| 051 | 8 | 101-4101 | 1A | RES 100 OHM 1/4W 5%<br>R4,67 | RP | P | 1 | P | C | P | EA | 2 | C675 | 28-Jul-81 | | | |
| 053 | 8 | 101-4102 | 1A | RES 1K OHM 1/4W 5%<br>R2-3,R15,R20-21<br>R38-39,R48,R54,R59<br>R60-62,R85-88<br>R100,R100 | RP | P | 1 | P | C | P | EA | 19 | C675 | 28-Jul-81 | | | |
| 060 | 8 | 101-4103 | 1A | RES 10K OHM 1/4W 5%<br>R13,R17,R42-45,R[illegible]<br>R49,R50-51,R117 | RP | P | 1 | P | C | P | EA | 11 | C675 | 28-Jul-81 | | | |
| 083 | 8 | 101-4104 | 1A | RES 100K OHM 1/4W 5% | RP | P | 1 | P | C | P | EA | 1 | C675 | 28-Jul-81 | | | |

EFFECTIVITY DATE: ALL

# I N D E N T E D B I L L S O F M A T E R I A L

PARENT PART: A3M0305 3 PROFILE FOR APPLE /// UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
[illegible] SPEC CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE. 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S P | A B | P L | UM | EXTENDED QTY PER | ECN CHG / START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | R91,92 | | | | | | | | | | | | |
| 064 | 8 | 101-4121 | 1A | RES 120 OHMS 1/4W 5% R25,26 | RP | P | 1 | P | C | P | EA | 2 | C67528-Jul-81 | | | |
| 077 | 8 | 101-4122 | 1A | RES 1.2K OHM 1/4W 5% R107 | RP | P | 1 | P | C | P | EA | 1 | C67528-Jul-81 | | | |
| 075 | 8 | 101-4123 | 1A | RES 12K OHM 1/4W 5% R73 | RP | P | 1 | P | C | P | EA | 1 | C67528-Jul-81 | | | |
| 072 | 8 | 101-4151 | 1A | RES 150 OHM 1/4W 5% R36,68,114 | RP | P | 1 | P | C | P | EA | 3 | C67528-Jul-81 | | | |
| 061 | 8 | 101-4152 | 1A | RES 1.5K OHM 1/4W 5% R7,82,83 | RP | P | 1 | P | C | P | EA | 3 | C67528-Jul-81 | | | |
| 056 | 8 | 101-4182 | 1A | RES 1.8K OHM 1/4W 5% R69 | RP | P | 1 | P | C | P | EA | 1 | C67528-Jul-81 | | | |
| 081 | 8 | 101-4201 | 1A | RES 200 OHM 1/4W 5% R110 | RP | P | 1 | P | C | P | EA | 1 | C67528-Jul-81 | | | |
| 069 | 8 | 101-4203 | 1A | RES 20.0K OHM 1/4W 5% R16,50 | RP | P | 1 | P | C | P | EA | 2 | C76028-Jul-81 | | | |
| 062 | 8 | 101-4220 | 1A | RES 22 OHM 1/4W 5% R23,24,32 | RP | P | 1 | P | C | P | EA | 3 | C67528-Jul-81 | | | |
| 055 | 8 | 101-4241 | 1A | RES 240 OHM 1/4W 5% R18,19 | RP | P | 1 | P | C | P | EA | 2 | C67528-Jul-81 | | | |
| 079 | 8 | 101-4242 | 1A | RES 2.4K OHM 1/4W 5% R80,40,41 | RP | P | 1 | P | C | P | EA | 3 | C67528-Jul-81 | | | |
| 067 | 8 | 101-4243 | 1A | RES 24K OHM 1/4W 5% R35 | RP | P | 1 | P | C | P | EA | 1 | C67528-Jul-81 | | | |
| 066 | 8 | 101-4244 | 1A | RES 240K OHM 1/4W 5% R31 | RP | P | 1 | P | C | P | EA | 1 | C67528-Jul-81 | | | |
| 078 | 8 | 101-4272 | 1A | RES 2.7K OHM 1/4W 5% R74 | RP | P | 1 | P | C | P | EA | 1 | C67528-Jul-81 | | | |
| 082 | 8 | 101-4301 | 1A | RES 300 OHM 1/4W 5% R111 | RP | P | 1 | P | C | P | EA | 1 | C67528-Jul-81 | | | |
| 070 | 8 | 101-4331 | 1A | RES 330 OHM 1/4W 5% R89,90 | RP | P | 1 | P | C | P | EA | 2 | C67528-Jul-81 | | | |
| 073 | 8 | 101-4332 | 1A | RES 3.3K OHM 1/4W 5% R100,76 | RP | P | 1 | P | C | P | EA | 2 | C67528-Jul-81 | | | |
| 049 | 8 | 101-4390 | 1A | RES 39 OHM 1/4W 5% R78,R112 | RP | P | 1 | P | C | P | EA | 2 | C67528-Jul-81 | | | |
| 054 | 8 | 101-4391 | 1A | RES 390 OHM 1/4W 5% R55 | RP | P | 1 | P | C | P | EA | 1 | C67528-Jul-81 | | | |
| 060 | 8 | 101-4392 | 1A | RES 3.9K OHM 1/4W 5% R9,8,113,1,27 R118,119 | RP | P | 1 | P | C | P | EA | 7 | C67513-Apr-83 | | | |
| 052 | 8 | 101-4471 | 1A | RES 470 OHM 1/4W 5% R37,5[illegible] | RP | P | 1 | P | C | P | EA | 4 | C67528-Jul-81 | | | |
| [illegible] | [illegible] | [illegible] | 1A | RES [illegible] OHM 1/4W [illegible] R116-[illegible] | RP | P | 1 | P | C | P | EA | [illegible] | C67528-Jul-81 | | | |
| 065 | [illegible] | [illegible] | 1A | [illegible] OHM 1/4W [illegible] | RP | P | 1 | P | C | P | EA | 5 | C67528-Jul-81 | | | |
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | P | EA | 1 | [illegible]-Jul-81 | | | |

EFFECTIVITY DATE: ALL

# I N D E N T E D B I L L S O F M A T E R I A L

PARENT PART: A3M0300 | PROFILE FOR APPLE /// | UM: EA | PROD CODE: DH | P/N: F354 | ASSEMBLY QTY: 1

[illegible] SREF CODE: S TYPE: 1 | APC: * | PLAN CODE: [illegible] | [illegible] 15 Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S F | A R | P L | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 045 | 8 | 101-4681 | 1A | RES 680 OHMS 1/4W 5%<br>R11-12,R2? | RP | P | 1 | P | C | P | EA | 3 | C675 | 28-Jul-81 | | | |
| 074 | 8 | 101-4751 | 1A | RES 750 OHM 1/4W 5%<br>R75,79 | RP | P | 1 | | C | P | EA | 2 | C675 | 28-Jul-81 | | | |
| 063 | 8 | 101-4752 | 1A | RES 7.5K OHM 1/4W 5%<br>R5,6,33,34 | RP | P | 1 | P | C | P | EA | 4 | C675 | 28-Jul-81 | | | |
| 076 | 8 | 101-4822 | 1A | RES 8.2K OHM 1/4W 5%<br>R72 | RP | P | 1 | P | C | P | EA | 1 | C675 | 28-Jul-81 | | | |
| 057 | 8 | 101-4823 | 1A | RES 82K OHM 1/4W 5%<br>R46 | RP | P | 1 | | C | P | EA | 1 | C675 | 28-Jul-81 | | | |
| 048 | 8 | 108-1543 | 1A | RES 1.54K OHM 1/4W 1%<br>R84 | RP | P | 1 | | C | P | EA | 1 | C758 | 28-Jul-81 | | | |
| 042 | 8 | 108-1783 | 1A | RES 1.78K OHM 1/4W 1%<br>R10 | RP | P | 1 | | C | P | EA | 1 | C758 | 28-Jul-81 | | | |
| 041 | 8 | 108-1963 | 1A | RES 1.96K OHM 1/4W 1%<br>R105,104 | RP | P | 1 | | * | P | EA | 2 | C758 | 01-Mar-82 | | | |
| 047 | 8 | 108-3833 | 1A | RES 3.83K OHM 1/4W 1%<br>R93,R95-96,R97 | RP | P | 1 | | * | P | EA | 4 | C758 | 31-Jul-81 | | | |
| 039 | 8 | 108-3923 | 1A | RES 3.92K OHM 1/4W 1%<br>R65,66 | RP | P | 1 | P | C | P | EA | 2 | C758 | 28-Jul-81 | | | |
| 046 | 8 | 108-4531 | 1A | RES 45.3 OHM 1/4W 1%<br>R14 | RP | P | 1 | | C | P | EA | 1 | C758 | 28-Jul-81 | | | |
| 043 | 8 | 108-5623 | 1A | RES 5.62K OHM 1/4W 1%<br>R94,R98 | RP | P | 1 | | C | P | EA | 2 | C758 | 28-Jul-81 | | | |
| 106 | 8 | 109-0002 | 0 | POT, TRIM 1K OHM 20% | RP | P | 1 | P | C | P | EA | 1 | 442 | 10-Oct-83 | | | |
| 040 | 8 | 109-0005 | A | POT,TRIM 500 OHM,20%<br>ALTN P/N 109-0420 | RP | P | 1 | | * | P | EA | 1 | C045 | 18-May-82 | | 09-Oct-83 | |
| 098 | 8 | 109-0410 | 1A | POT, 500 OHM 18 - 25 TURNS | RP | P | 1 | | C | P | EA | 1 | C504 | 28-Jul-81 | | 02-Mar-82 | |
| 099 | 8 | 109-0420 | MA | POT, 1 TURN .250 DIA, 500 OHMS<br>ALTN P/N FOR ITEM 40 | RP | P | 1 | | C | P | EA | 0 | P105 | 18-May-82 | | 09-Oct-83 | |
| 038 | 8 | 111-0023 | 1A | RES NETWORK 7 X 560 OHM 5%<br>RP2-8 | RP | P | 1 | | C | P | EA | 7 | C675 | 28-Jul-81 | | | |
| 094 | 8 | 111-0024 | 1A | RES NETWORK 7 X 4.7K OHM 5%<br>RP-1 | RP | P | 1 | | C | P | EA | 1 | C675 | 28-Jul-81 | | | |
| 059 | 8 | 127-0100 | 1B | CAP TANT 4.7 uF 20% 10V<br>C59 | RP | P | 1 | | * | P | EA | 1 | C599 | 28-Jul-81 | | | |
| 037 | 8 | 127 0101 | 1B | CAP TANT 10 uF 20% 15/16V<br>C38-C40 | RP | P | 1 | | * | P | EA | 3 | C599 | 28-Jul-81 | | | |
| 029 | 8 | 130-0002 | 1B | CAP CER AXIAL .01 UF +80%-20% 25V<br>C1,2,6,7 | RP | P | 1 | P | C | P | EA | 4 | C939 | 28-Jul-81 | | | |
| 097 | 8 | 130-0003 | 1B | CAP CER AXIAL .1 UF +80%-20% 25V<br>C13,C14 | RP | P | 1 | P | C | P | EA | 2 | C939 | | | 14-Apr-83 | |
| 028 | 8 | 130 0007 | 1B | CAP CER AXIAL .1 UF +80%-20% 25V<br>C3,5,10,16,21,22,25,<br>[illegible]<br>[illegible] 51,53,55-57,6? | RP | P | 1 | | C | P | EA | 31 | C939 | 01-Mar-82 | | | |
| 031 | [illegible] | 130-[illegible] | 1A | CAP CER [illegible] UF 10% 25V<br>[illegible] | RP | P | 1 | | C | P | EA | 2 | [illegible] | 28-Jul-81 | | | |
| [illegible] | | [illegible] | | [illegible] | RP | [illegible] | | | | | [illegible] | | [illegible] | [illegible] | | | |

EFFECTIVITY DATE: ALL

# I N D E N T E D B I L L S O F M A T E R I A L

PARENT PART: A3M0305 7 PROFILE FOR APPLE /// UM: EA PROD CODE: DH LCN: P354 ASSEMBLY QTY: 1
PIC: R SRCE CODE: 6 TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION / REMARKS | PR CD S C T Y S P A R P L UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 036 | 8 | 137-5401 | 1A | CAP DIP MICA 20 PF 5% 500V<br>C61 | RP P I C P EA | 1 | C541 | 28-Jul-81 | | | |
| 035 | 8 | 137-5701 | 1A | CAP DIP MICA 47 PF 5% 500V<br>C34 | RP P 1 P C P EA | 1 | C541 | 28-Jul-81 | | | |
| 034 | 8 | 137-5801 | 1A | CAP DIP MICA 75 PF 5% 500V<br>C8 | RP P 1 C P EA | 1 | C541 | 28-Jul-81 | | | |
| 032 | 8 | 137-6101 | 1A | CAP DIP MICA 100 PF 5% 500V<br>C33 | RP P 1 P C P EA | 1 | C541 | 28-Jul-81 | | | |
| 033 | 8 | 137-6301 | 1A | CAP DIP MICA 150 PF 5% 500V<br>C9, C18, C17, C20 | RP P 1 C P EA | 4 | C541 | 28-Jul-81 | | | |
| 027 | 8 | 151-4701 | IC | INDUCTOR, 5.6 uH 10%<br>L1, L2 | RP P I * P EA | 2 | C395 | 28-Jul-81 | | | |
| 021 | 8 | 156-0100 | A | DELAY LINE 14 PIN DIP 100 OHM, 50<br>DLY 2 | RP P I * P EA | 1 | 792 | 28-Jul-81 | | | |
| 022 | 8 | 156-0110 | A | DELAY LINE 14 PIN DIP 500 OHM 100<br>DLY 1 | RP P 1 * P EA | 1 | 792 | 28-Jul-81 | | | |
| 007 | 8 | 301-0045 | A | IC, 7445<br>U4 | RI P 1 C P EA | 1 | C063 | 28-Jul-81 | | | |
| 001 | 8 | 301-0074 | A | IC, 7474<br>U2 | RI P 1 P C P EA | 1 | C063 | 28-Jul-81 | | | |
| 005 | 8 | 305-0014 | A | IC, 74LS14<br>U30 | RI P 1 P B P EA | 1 | 442 | 28-Jul-81 | | | |
| 002 | 8 | 305-0174 | A | IC, 74LS174<br>U29 | RI P 1 P B P EA | 1 | 442 | 28-Jul-81 | | | |
| 004 | 8 | 307-0064 | A | IC, 74S64<br>U27 | RI P 1 B P EA | 1 | C063 | 28-Jul-81 | | | |
| 013 | 8 | 325-0102 | A | QUAD 2-INPUT NOR GATE<br>U18 | RI P 1 C P EA | 1 | 741 | 28-Jul-81 | | | |
| 010 | 8 | 325-0107 | A | TRIPLE 2-INPT EXCL OR/EXCL NOR GA<br>U10, U15 | RI P 1 C P EA | 2 | 741 | 28-Jul-81 | | | |
| 008 | 8 | 325-0114 | A | TRIPLE LINE RECEIVER<br>U5, U14 | RI P I C P EA | 2 | 741 | 28-Jul-81 | | | |
| 009 | 8 | 325-0116 | A | TRIPLE LINE RECEIVER<br>U26, U9 | RI P 1 C P EA | 2 | 741 | 28-Jul-81 | | | |
| 012 | 8 | 325-0117 | A | DL 2-WID 2-3-INPT OR-AND/OR-AND-I<br>U16 | RI P 1 C P EA | 1 | 741 | 28-Jul-81 | | | |
| 011 | 8 | 325-0131 | B | IC ECL HIGH SPEED DUAL D FLIP-FLO<br>U11,17,19,20,21,22 | RI P 1 C P EA | 6 | C255 | 28-Jul-81 | | | |
| 006 | 8 | 327-0453 | A | IC, DUAL PERIPHERAL DRIVES<br>U3 | RI P I * P EA | 1 | 757 | 28-Jul-81 | | | |
| 096 | 8 | 335-0007 | A | PROG HEX 16 INPT REG AND-OR GT AR | RI P I P B P EA | 1 | 642 | 28-Jul-81 | | 02-Mar-82 | |
| 003 | 8 | 341-0069 | A | MEMPAL<br>PROG HEX 16 INPT<br>REG AND OR GT ARY<br>U28 | RL A I * P EA | 1 | PI050 | 1-Mar-82 | | | |
| 014 | 8 | 351-[illegible] | A | IC TRANS ARRAY QUAD PNP GEN PURPO<br>U21, U [illegible] U1[illegible] | RP P 1 C P EA | 3 | 750 | 28-Jul-81 | | | |
| 016 | [illegible] | [illegible] | [illegible] | [illegible] HIGH FREQ. | RP P I [illegible] P EA | 1 | 750 | 28-Jul-81 | | | |

INDENTED BILLS OF MATERIAL

EFFECTIVITY DATE: ALL

PARENT PART: A3M0305 3 PROFILE FOR APPLE /// UM: EA PROD CODE: DH ECN: F354 ASSEMBLY QTY: 1
LOC: F SELL CODE: 0 TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar 83

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S P | A B | P L | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | U1, U24<br>ITEM 100-103 ALT P/N | | | | | | | | | | | | | |
| 058 | 8 | 353-0005 | A | IC REG. +5V 100MA TO 92, 3 TERMNL<br>RG1 | RI | P | 1 | | C | P | EA | 1 | 792 | 28-Jul-81 | | | |
| 018 | 8 | 353-0319 | A | IC, HIGH SPEED DUAL COMPARATOR<br>U13 | RI | P | 1 | | C | P | EA | 1 | 750 | 28-Jul-81 | | | |
| 017 | 8 | 353-0353 | A | DUAL FET OP AMP/BUFFER<br>U25,U8 | RP | P | 1 | | C | P | EA | 2 | 750 | 28-Jul-81 | | | |
| 015 | 8 | 353-0592 | A | IC, VIDEO AMPLIFIER<br>U6 | RI | P | 1 | | C | P | EA | 1 | 750 | 28-Jul-81 | | | |
| 024 | 8 | 371-4152 | 1A | DIODE FAST SWITCH 1N4152 500mW 30<br>CR1-14, CR16-21,<br>CR23-24, CR26 | RP | P | 1 | | C | P | EA | 23 | C53828-Jul-81 | | | | |
| 100 | 8 | 372-2222 | 1A | TRANS,NPN,SWITCHING AND AMP 2N222<br>ALT P/N FOR ITEM 23<br>U1-QTY 2 | | * | * | | * | * | EA | 0 | C40308-Jul-83 | | | | |
| 101 | 8 | 372-2907 | A | XSTR,2N2907, PNP SWITCH & AMPLIFI<br>ALT P/N FOR ITEM 23<br>U1-QTY 2 | | * | * | | * | * | EA | 0 | C25908-Jul-83 | | | | |
| 102 | 8 | 372-3904 | A | TRANSISTOR,NPN SW.&AMP. 2N3904<br>ALT P/N FOR ITEM 23<br>U24-QTY 2 | RP | P | 1 | P | C | P | EA | 0 | C30308-Jul-83 | | | | |
| 103 | 8 | 372-3906 | 1B | TRANSISTOR,PNP SW.&AMP. 2N3906<br>ALT P/N FOR ITEM 23<br>U24-QTY 2 | RP | P | 1 | P | C | P | EA | 0 | C76808-Jul-83 | | | | |
| 026 | 8 | 375-0010 | 1A | DIODE REFERENCE 10mA 1.2V<br>CR15 | RP | P | 1 | | C | P | EA | 1 | C53828-Jul-81 | | | | |
| 019 | 8 | 375-0012 | 1A | DIODE DUAL VOLT VAR CAP 200mA 32V<br>Q2 | RP | P | 1 | | * | P | EA | 1 | C53828-Jul-81 | | | | |
| 020 | 8 | 376-0016 | A | FET, N-CHANNEL VOLT CONTRL RESIS.<br>Q1 | RP | P | 1 | | * | P | EA | 1 | C30328-Jul-81 | | | | |
| 090 | 8 | 511-0801 | C | SOCKET, IC 8 PIN | RP | P | 1 | P | C | P | EA | 3 | 799 | 28-Jul-81 | | 14-Apr-83 | |
| 091 | 8 | 511-1401 | C | SOCKET, IC 14 PIN | RP | P | 1 | P | C | P | EA | 12 | 799 | 28-Jul-81 | | 14-Apr-83 | |
| 092 | 8 | 511-1601 | C | SOCKET, IC 16 PIN | RP | P | 1 | P | C | P | EA | 17 | 799 | 28-Jul-81 | | 14-Apr-83 | |
| 093 | 8 | 511-2001 | C | SOCKET, IC 20 PIN | RP | P | 1 | P | C | P | EA | 1 | 799 | 28-Jul-81 | | 14-Apr-83 | |
| 089 | 8 | 515-0005 | 1B | CONN,PIN,SINGLE | RP | P | 1 | P | C | P | EA | 15 | C78128-Jul-81 | | | | |
| 087 | 8 | 515-0120 | 1A | CONN,HDR,SGL ROW,4P | RP | P | 1 | | * | P | EA | 1 | C78128-Jul-81 | | | 02-Mar-82 | |
| 085 | 8 | 515-0130 | 1B | CONN,HDR,RT ANG,DBL ROW,8/16P<br>J5 | RP | P | 1 | | * | P | EA | 1 | C78128-Jul-81 | | | | |
| 088 | 8 | 515-0131 | 1B | CONN,HDR,RT ANG,DBL ROW,17/34P<br>J2 | RP | P | 1 | | C | P | EA | 1 | C78101-Mar-82 | | | 28-Aug-83 | |
| 086 | 8 | 515-0140 | 1A | CONN,HDR,RT ANG,5P,W/LNG RAMP<br>J6-8 | RP | P | 1 | | * | P | EA | 3 | C78128-Jul-81 | | | | |
| 105 | 8 | 515-0780 | 1A | CONN,HDR,RT ANG,DBL ROW,17/34P<br>J2 | | * | * | | * | * | EA | 1 | C78128-Aug-83 | | | | |
| 104 | 8 | 550-0101 | 1B | TUBING, HEAT SHRINK 1/4 IN BLACK<br>USE W [illegible]<br>[illegible] | EX | X | 7 | P | C | P | FT | 0 | C50308-Jul-83 | | | | |
| [illegible] | | [illegible] | | [illegible] | [illegible] | | | | | | | [illegible] | [illegible] | | | | |

EFFECTIVITY DATE: ALL

# I N D E N T E D B I L L S O F M A T E R I A L

PARENT PART: A3M0305 3 PROFILE FOR APPLE /// UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
EPC: P SREF CODE: G TYPE: I ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S P | A B | P L | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 006 | 4 | 810-0090 | 1A | DRESS PANEL, DRIVE, PROFILE | RM | P | 1 | | * | P | EA | 1 | P567 | 14-Dec-82 | | | |
| 007 | 4 | 810-0091 | 1B | DRESS PANEL, PWR SPLY PROFILE | RM | P | 1 | | * | P | EA | 1 | P644 | 14-Dec-82 | | | |
| 012 | 4 | 825-0207 | B | LABEL, FCC NON COMLJT$(RTRQH&HQ,\ | | 7 | P | C | P | | EA | 1 | P593 | 21-Mar-83 | | | |
| 002 | 3 | 656-6120 | 3B | MFG ASSY, ACC PAC, FG, PROFILE | | * | * | | * | * | EA | 1 | P354 | 14-Dec-82 | | 01-Sep-83 | |
| 007 | 4 | 030-0158 | AB | FORM, USER INPUT REPORT A3 | EX | X | 7 | P | C | P1 | | | | | | | |

B2
'J'

5B

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S P | A B | P L | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J%A5B%J$bH | | 030-0183 | 1E | REGIS. CARD, PERIPH. & SOFTWARE | EX | X | 7 | P | C | P | EA | 1 | A927 | 14-Dec-82 | | 01-Sep-83 | |
| 009 | 4 | 030-0272 | 1C | MANUAL, USER'S, PROFILE FOR A3 | EX | P | 7 | | C | P | EA | 1 | P634 | 14-Dec-82 | | 01-Sep-83 | |
| 005 | 4 | 030-0273 | 1D | UNPACKING INSTRUCTIONS, PROFILE | EX | X | 7 | | C | P | EA | 1 | P729 | 14-Dec-82 | | 01-Sep-83 | |
| 006 | 4 | 030-0294 | B | PACKING LIST, PROFILE | EX | X | 7 | | * | P | EA | 1 | P317 | 14-Dec-82 | | 01-Sep-83 | |
| 016 | 4 | 031-0017 | A | NOTICE, PROFILE | EX | P | 7 | | * | P | EA | 1 | P138 | 14-Dec-82 | | 01-Sep-83 | |
| 015 | 4 | 031-0241 | C | PROFILE HELPFUL HINTS | EX | X | 7 | | * | P | EA | 1 | P177 | 14-Dec-82 | | 01-Sep-83 | |
| 002 | 4 | 590-0003 | 1D | CABLE, A.C. POWER CORD | 2M | P | 1 | P | C | P | EA | 1 | A862 | 14-Dec-82 | | 01-Sep-83 | |
| 003 | 4 | 681-0022 | 1E | DISKETTE ASSY, A3 PROFILE DRIVER | WS | A | 1 | | C | P | EA | 1 | L273 | 14-Dec-82 | | 01-Sep-83 | |
| 001 | 5 | 004-0039 | 1 | DISKETTE, BLANK, WRITE PROTECTED | RD | P | 1 | P | C | P | EA | 1 | 332 | 31-Aug-81 | | | |
| 002 | 5 | 026-1010 | 1E | LABEL, DISKWARE, A3 PROFILE DRIVE | EX | X | 7 | | * | P | EA | 1 | L151 | 31-Aug-81 | | | |
| 000 | 5 | 681-0001 | C | DISKETTE ASSY, SYSTEM UTILITIES | RD | A | 1 | P | C | P | EA | 0 | 995 | 01-Mar-82 | | | |
| 004 | 6 | 000-0000 | 1A | NOT USED THIS ASSEMBLY | | D | * | P | D | P | EA | 0 | NONE | | | | |
| 001 | 6 | 004-0039 | 1 | DISKETTE, BLANK, WRITE PROTECTED | RD | P | 1 | P | C | P | EA | 0 | 332 | 29-Jan-81 | | | |
| 002 | 6 | 026-1002 | C | LABEL, DISKWARE SYSTEM UTILITIES | EX | X | 7 | P | C | P | EA | 0 | 995 | 29-Jan-81 | | | |
| 000 | 6 | 681-0001D | C | DWG, DISKWARE ASSY APPLE 3 | EX | D | 7 | | * | U | EA | 0 | 995 | | | | |
| 003 | 6 | 914-0019 | B | ENVELOPE, DISKETTE APPLE 3 | EX | X | 7 | P | C | P | EA | 0 | 568 | 29-Jan-81 | | | |
| 003 | 5 | 914-0019 | B | ENVELOPE, DISKETTE APPLE 3 | EX | X | 7 | P | C | P | EA | 1 | 568 | 31-Aug-81 | | | |
| 004 | 4 | 681-0030 | 3D | DISKETTE ASSY, A3 PROFILE 'DEMO' | WS | A | 1 | | C | P | EA | 1 | P574 | 14-Dec-82 | | 01-Sep-83 | |
| 001 | 5 | 004-0039 | 1 | DISKETTE, BLANK, WRITE PROTECTED | RD | P | 1 | P | C | P | EA | 1 | 332 | 19-Oct-81 | | | |
| 002 | 5 | 026-1011 | 1D | LABEL, DISKWARE, A3, PROFILE DEMO | EX | X | 7 | | * | P | EA | 1 | P378 | 19-Oct-81 | | | |
| 000 | 5 | 681-0001 | C | DISKETTE ASSY, SYSTEM UTILITIES | RD | A | 1 | P | C | P | EA | 0 | 995 | 19-Oct-81 | | | |
| 004 | 6 | 000-0000 | 1A | NOT USED THIS ASSEMBLY | | D | * | P | D | P | EA | 0 | NONE | | | | |
| 001 | 6 | 004-0039 | 1 | DISKETTE, BLANK, WRITE PROTECTED | RD | P | 1 | P | C | P | EA | 0 | 332 | 29-Jan-81 | | | |
| 002 | 6 | 026-1002 | C | LABEL, DISKWARE SYSTEM UTILITIES | EX | X | 7 | P | C | P | EA | 0 | 995 | 29-Jan-81 | | | |
| 000 | 6 | 681-0001D | C | DWG, DISKWARE ASSY APPLE 3 | EX | D | 7 | | * | U | EA | 0 | 995 | | | | |
| 003 | 6 | 914-0019 | B | ENVELOPE, DISKETTE APPLE 3 | EX | X | 7 | P | C | P | EA | 0 | 568 | 29-Jan-81 | | | |
| 003 | 5 | 914-0019 | B | ENVELOPE, DISKETTE APPLE 3 | EX | X | 7 | P | C | P | EA | 1 | 568 | 19-Oct-81 | | | |
| 018 | 4 | 684-5012 | 1C | SUBASSY,DSKW BACKUP /// A3 | WS | N | 1 | | * | P | EA | 1 | L241 | 03-Jan-83 | | 01-Sep-83 | |
| 002 | 5 | 030-0381 | 1A | MANUAL,BACKUP III | EX | P | 7 | | * | P | EA | 1 | P599 | 03-Jan-83 | | | |
| 001 | 5 | 681-0032 | B | ASSY DISKETTE BACKUP III | WS | A | 1 | | * | P | EA | 1 | A412 | 03-Jan-83 | | | |
| 004 | 6 | 000-0000 | 1A | NOT USED THIS ASSEMBLY | | D | * | P | D | P | EA | 0 | NONE | 15-Nov-82 | | | |
| 001 | 6 | 004-0039 | 1 | DISKETTE, BLANK, WRITE PROTECTED | RD | P | 1 | P | C | P | EA | 1 | 332 | 15-Nov-82 | | | |
| 002 | 6 | 026-1101 | D | LABEL, DISKWARE BACKUP /// A3 | EX | P | 7 | | * | P | EA | 1 | A412 | 28-Jan-83 | | | |
| 000 | 6 | 681-0001D | C | DWG, DISKWARE ASSY APPLE 3 | EX | D | 7 | | * | U | EA | 0 | 995 | 15-Nov-82 | | | |
| 003 | 6 | 914-0019 | B | ENVELOPE, DISKETTE APPLE 3 | EX | X | 7 | P | C | P | EA | 1 | 568 | 15-Nov-82 | | | |
| 000 | 5 | 684-5012D | A | DWG, SUBASSY, DSKW BACK-UP 3 A3 | | * | * | | * | * | EA | 0 | F317 | 03-Jan-83 | | | |
| 003 | 5 | 942-0017 | 1D | [illegible] 12" [illegible] | EX | X | 1 | P | C | P | PI | 0.0001 | L309 | 01-Oct-83 | | | |
| 013 | 4 | 825-0326 | M | LABEL, OPEN ME FIRST PROFILE | EX | P | 7 | | * | P | EA | 1 | P124 | 14-Dec-82 | | 01-Sep-83 | |
| 012 | 4 | [illegible] | 1D | LABEL, APL PAC PROFILE FOR A3 | EX | P | 7 | | * | P | EA | 1 | P639 | 14-Dec-82 | | 01-Sep-83 | |
| [illegible] | 4 | [illegible] | [illegible] | LABEL, SERIAL NUMBER | [illegible] | P | 7 | | * | P | EA | 0.20[illegible] | P124 | 14-Dec-82 | | 01-Sep-83 | |
| 011 | 4 | [illegible] | [illegible] | [illegible] | [illegible] | | | | | | | [illegible] | [illegible] | [illegible] | | [illegible] | |

EFFECTIVITY DATE: ALL

I N D E N T E D B I L L S O F M A T E R I A L

PARENT PART: A3M0305 3 PROFILE FOR APPLE /// UM: EA PROD CODE: DH ECN: P354 ASSEMBLY QTY: 1
PRC: B SRCE CODE: G TYPE: 1 ABC: * PLAN CODE: P DATE: 15-Mar-83

| ITEM | LEVEL | COMPONENT PART NUMBER | E R | PART DESCRIPTION / REMARKS | PR CD | S C | T Y | S P | A B | P L | UM | EXTENDED QTY PER | ECN CHG | START DATE | S/N | CLOSE DATE | S/N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 020 | 3 | 825-0114 | 1E | LABEL, PROFILE MODEL & SERIAL NO. | EX | P | 7 | | * | P | EA | 1 | P631 | 14-Dec-82 | | 01-Sep-83 | |
| 007 | 3 | 825-0116 | C | LABEL, INDIVIDUAL CARTON PROFILE | EX | P | 7 | | * | P | EA | 1 | P284 | 14-Dec-82 | | 01-Sep-83 | |
| 010 | 3 | 825-0207 | B | LABEL, FCC NON COMPLIANCE APPLE 3 | EX | X | 7 | P | C | P | EA | 1 | P593 | 14-Dec-82 | | 01-Sep-83 | |
| 024 | 3 | 825-0311 | 1B | LABEL, LOGO 16MM BY 16MM | EX | X | 7 | P | C | P | EA | 1 | P514 | 15-Feb-83 | | 01-Sep-83 | |
| 025 | 3 | 825-0313 | 1B | LABEL, NAMEPLATE, PROFILE | EX | P | 7 | | * | P | EA | 1 | P514 | 15-Feb-83 | | 01-Sep-83 | |
| 026 | 3 | 825-0315 | 1C | LABEL, LED PROFILE | EX | P | 7 | | * | P | EA | 1 | P514 | 15-Feb-83 | | 01-Sep-83 | |
| 009 | 3 | 825-0317 | A | LABEL, FRAGILE, PROFILE | EX | P | 7 | | * | P | EA | 4 | P112 | 14-Dec-82 | | 01-Sep-83 | |
| 013 | 3 | 825-0328 | A | LABEL, DO NOT REMOVE END CAPS | EX | P | 7 | | * | P | EA | 1 | P125 | 14-Dec-82 | | 01-Sep-83 | |
| 014 | 3 | 825-0329 | A | LABEL, SERIAL NUMBER | EX | P | 7 | | * | P | EA | 0.6000 | P124 | 14-Dec-82 | | 01-Sep-83 | |
| 016 | 3 | 918-0050 | B | ANGLE BOARD, PALLETIZING, 2X2X36 | EX | X | 7 | S | C | U | EA | 0.3330 | M583 | 14-Dec-82 | | 01-Sep-83 | |
| 017 | 3 | 918-0051 | B | SEALS, STRAPPING, 50 DY | EX | X | 7 | S | C | P | EA | 0.3330 | M583 | 14-Dec-82 | | 01-Sep-83 | |
| 018 | 3 | 918-0052 | B | TAPE, STRAPPING, CONTRAX 816 | EX | X | 7 | S | A | P | EA | 0.0007 | M583 | 14-Dec-82 | | 01-Sep-83 | |
| 019 | 3 | 918-0071 | B | PALLET, 48 X 40 2 WAY ENTRY | EX | P | 7 | | B | P | EA | 0.1670 | M725 | 14-Dec-82 | | 01-Sep-83 | |
| 015 | 3 | 919-0010 | A | LABEL, MODEL TYPE 'US STD' | | * | * | | * | * | EA | 1.3330 | P330 | 14-Dec-82 | | 01-Sep-83 | |
| | | | | RUBBER STAMP OR PEN | | | | | | | | | | | | | |
| 003 | 3 | 942-0117 | 1C | BOX, 29.5 X 21.25 X 16.13, PROFIL | EX | X | 7 | | C | P | EA | 1 | P399 | 14-Dec-82 | | 01-Sep-83 | |
| 011 | 3 | 942-0142 | A | BOX, OPF 19.25 X 10.75 X 6.88 | EX | P | 7 | | * | P | EA | 1 | P125 | 14-Dec-82 | | 01-Sep-83 | |
| 022 | 3 | 946-0003 | B | TAPE, P.S. 2 inch X 60 yard | EX | X | 7 | P | C | P | RL | 0 | C064 | 14-Dec-82 | | 01-Sep-83 | |
| | | | | ALTN P/N FOR ITEM 8 | | | | | | | | | | | | | |
| | | | | ALTN QTY .059 | | | | | | | | | | | | | |
| 008 | 3 | 946-0008 | A | TAPE, SEALING GLASS WEB #341 A3 | EX | X | 7 | P | B | P | RL | 0.0150 | 474 | 14-Dec-82 | | 01-Sep-83 | |
| | | | | ALTN P/N 946-0003 | | | | | | | | | | | | | |
| | | | | ALTN P/N 946-0011 | | | | | | | | | | | | | |
| 023 | 3 | 946-0011 | A | TAPE, PRESSURE SENSITIVE 2 INCH, AU | EX | X | 7 | | * | P | RL | 0 | C049 | 14-Dec-82 | | 01-Sep-83 | |
| | | | | ALTN P/N FOR ITEM 8 | | | | | | | | | | | | | |
| | | | | ALTN QTY .0035 | | | | | | | | | | | | | |
| 006 | 3 | 946-0012 | 1C | STRAPPING, POLYPRO 1/2 INCH | EX | X | 7 | | * | P | RL | 0.0010 | P722 | 14-Dec-82 | | 01-Sep-83 | |